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No. 5.

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EYE-SPOT IN WHEAT

A DISEASE that has been forcibly brought to the notice of farmers in the Taieri district of Otago this year is Eye-spot.

Eye-spot disease is caused by a fungus (*Cercospora herpotrichoides*), a severe attack of which may result in the crop becoming a total loss. The disease is fairly well distributed, having been recorded overseas from the United Kingdom, Europe, United States of America and South Australia. In these countries it is not regarded as a disease of major importance, although occasional severe losses have been reported.

Districts Affected

The first reported outbreak of Eye-spot in New Zealand occurred this season in the Taieri district of Otago, when a considerable number of crops were affected, some very severely. At least one affected crop was later reported from mid-Canterbury and light infection has since been noticed in the Waihemo-Waikouaiti Counties and in Southland. So far its incidence in other districts is uncertain.

The Taieri district is a rich alluvial plain ideally suited to the production of high-yielding crops of wheat. Crops of 80 bushels per acre are not uncommon, whilst the average yield of recent years is in the vicinity of 48 bushels per acre. The acreage sown in wheat each year is very variable, but is about 2,500, and the acreage sown last year was probably in excess of this figure. In other words the Taieri produces between 100,000 and 150,000 bushels of wheat annually. This is certainly only a small proportion of New Zealand's wheat production, but it is nevertheless important.

The attack of Eye-spot which occurred this year was widespread over

the richer lower-lying portions of the plain. As no detailed survey was made the exact acreage affected is not known, but it is estimated that approximately 300 acres of wheat were severely affected while possibly another 600 at least were affected, but less severely.

— By —

S. H. SAXBY,
Instructor in Agriculture,
Dunedin

Severity of Attack

The severity of the attack is reflected directly in the yield of milling quality wheat. In some severe attacks the harvesting of the crop has not been worth while. In one instance a considerable area of potential "80 bushel" land yielded only 2 bushels per acre of poor quality fowl wheat. Less severe attacks on similar country have resulted in yields of less than 30 bushels per acre of rather "pinched" wheat. A slight attack does not result in any visibly apparent reduction in yield. On account of the very great variation in the severity of the attacks no reliable estimate of the total quantity of grain lost as the result of the disease can possibly be made.

Eye-spot is known to attack wheat, rye-corn and barley, but under ordinary conditions oats are immune.

Symptoms

The most striking symptom of a severe attack of Eye-spot is the sudden and complete collapse of the crop. This collapse usually takes place at or

shortly after flowering, by which time the fungus is beginning to take effect. The immediate cause of the crop collapsing is usually a strong wind, with or without rain, and a crop that goes down completely does not rise again. A small amount of nutriment can apparently still travel through the stems, with the result that the straw may tend to bend upwards at one of the nodes nearer the ear. Even so, very little grain matures in a normal manner, most of it being very small and shrivelled, its only value being as poor quality feed wheat.

Where crops are affected to merely a moderate degree there is no mass collapse of the crop and only some of the plants go down. In such a crop a proportion of the straws lodge, and the crop has a somewhat tangled appearance. As a rule these fallen straws do not mature the grain and have a pinched appearance. Where the infection is very slight little or no appreciable damage is caused, and the presence of the disease can be established only by a careful examination of a number of plants. This season a fairly large number of crops have been affected in this manner, and there is little doubt that many farmers did not realise that what appear to be perfectly normal crops are in reality slightly infected, and, as will be explained later, are a potential source of infection.

Although the collapse of the crop is a fairly certain indication of the presence of Eye-spot, this is by no means conclusive evidence. A close examination of a plant, however, shows associated symptoms which as a rule are seen at and below the third node from the ground-level when the enveloping sheaths have been removed. A light infection is seen as irregularly shaped brown areas. Some of these are quite

small, while others may be up to an inch or more in length. Frequently the brown areas are elliptical in shape with a more or less normally coloured stem in the centre of the area. It is from this formation that the disease

obtains its name of Eye-spot. In a severe infection the brown colouration may completely surround the stem. It is quite common for a large proportion of the internode to be discoloured, and for this to contain darker elliptical

patches. In some cases the general brown discolouration may be replaced by a striking orange discolouration, which in turn usually contains brown elliptical markings. These elliptical

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Fig. 1 (left)—The typical appearance of a moderately affected crop. Weakened straws have fallen in all directions and are intermingled with upright and unaffected plants. Fig. 2 (right)—The standing portion in the background was in rape last season. Eye-spot infection is not severe. The portion in the foreground was in wheat last year and is severely infected with Eye-spot.

markings are sometimes quite small and may appear as spots or short lines.

When the stem is split open longitudinally the fine thread-like hyphae may be seen with ease. At first white, these later turn brown or orange.

The ultimate effect of the fungus is to weaken the straw to such an extent that its collapse is certain when a strain—such as imposed by wind—is thrust upon it.

When a crop has been lodged for some time (three weeks or more) the stems at the point where they have bent over usually rot away completely.

Another effect of the fungus is to reduce the amount of nutriment proceeding to the forming seeds. In a severe attack little or no nutriment may reach the seeds, which pre-ripen as small shrivelled grains. In a light attack little or no effect on the quality of the grain is visible.

Conditions Suiting Eye-spot

Like many other fungi, Eye-spot thrives under humid conditions. As

the attack is manifested near the base of the plant any conditions encouraging humidity there will also encourage Eye-spot attack.

The last two seasons in the Taieri district have been ideal for the growth of this fungus. Last season rainfall was fairly high with many wet days. The season just passed followed a dry winter with frequent but light rains throughout the spring and summer.

Although the disease was recorded for the first time this season (1942/43), it is now known that it was present and severely affected several crops last season (1941/42). It is thought likely that some crops were also affected the season before (1940/41). Although the disease may have been present prior to the 1940/41 season, no positive evidence of its incidence is available.

The fact that it was present last year when ideal conditions for its growth existed was from the aspect of disease incidence ideal for its widespread distribution and damage this year.

Transmission of Eye-spot

The question of the manner of transmission of the disease is of considerable importance, as upon a knowledge of this depend any methods that may be recommended for its control. Initial infection is almost certainly introduced with the seed. It is not known to what extent severe infection may thus result, but there are indications that the sowing of infected seed is very risky.

The most severely affected paddocks were on the whole those that were in wheat the previous year. These areas last year were almost certainly infected but to such a slight extent that no damage was apparent. As the fungus overwinters on stubble or other

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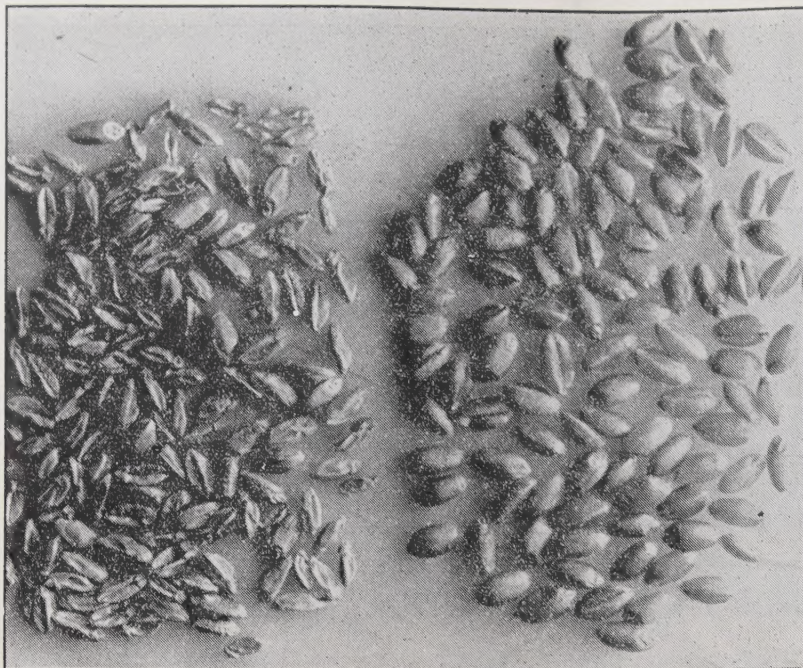


Fig. 3—Hand-rubbed grain from the areas shown in Figure 2. The moderately infected portion has not affected the quality of the grain, whereas severe infection has resulted in a very shrivelled sample.

refuse the following crop would be liable to a considerably increased infection. This is doubtless what happened in respect of many of the severely infected crops this season.

The experience of several farmers bears this out. The following instance, which is typical of several others, is of particular interest. In the 1941/42 season the headland and one other portion of the paddock were sown in rape. The remainder of the paddock was sown in wheat. In the 1942/43 season the whole paddock was sown in wheat. An attack of Eye-spot developed all through the paddock but was severe only where wheat was grown the previous year. Where wheat followed rape, infection was present but was not severe enough to cause appreciable damage. Although several explanations of this may be suggested, the most likely is that of infection resulting from sowing wheat following an infected crop.

Severe damage was, however, not confined solely to second crops; several instances of heavy infection and consequent severe damage to first crops have been reported. In some cases

these have followed root crops, and others, pasture up to 15 years old.

The manner in which infection was carried to these areas has not yet been

satisfactorily explained. A number of possibilities exist, but none accounts for the infection of certain areas. The possibilities are:—

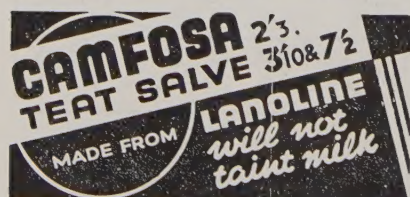
1. **Seed borne:** Available evidence suggests that Eye-spot is not carried within the seed as is the case with diseases such as dry-rot of turnips and loose-smut of wheat. It may, however, be carried to some extent on the seed and on chaff that is not dressed out by the threshing plant.

2. **Introduction of Straw:** A certain amount of wheat straw is fed to stock in the winter, and it is possible that for the early part of the winter infected straw may have been carted on to paddocks that were later ploughed and sown in wheat.

3. **Transmission by harvesting machinery:** The possibility exists that debris from an infected crop may be carried from farm to farm, or paddock to paddock on travelling harvesting machinery. There is, however, no evidence to show that this has taken place.

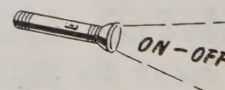
Varieties

Approximately 90 per cent. of the wheat grown on the Taieri Plain is now Cross 7. The remaining 10 per cent. is made up of the following varieties: Tuscan, Hunters (Red Chaff), Jumbuck and Marquis. Because the greater part of the wheat grown is Cross 7, it is not surprising that the opinion has been expressed that Cross 7 is particularly susceptible. There is,



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however, no evidence to show that Cross 7 is more susceptible than any other variety. Reports of both slightly and severely infected crops of Red Chaff have been received, and infected plants of this variety have also been seen when present as an impurity in a crop of severely damaged Cross 7.

Longevity of Disease

Overseas experience has shown that Eye-spot will carry over in the soil for some four years. Consequently it is not advisable to grow wheat in a paddock that has produced an infected crop until at least this time has elapsed. This applies also to barley and rye-corn, both of which are susceptible. As oats are immune they may be sown on ground infected with Eye-spot.

Time of Sowing

European experience has shown that winter-sown wheat is attacked more severely than is spring-sown wheat.

This is not borne out by local experience, as many of the very severely affected crops were spring-sown. It is not known, however, whether, on the whole, late spring sowings (mid October) were less affected than early spring sowings (August). As a late sowing would tend to produce less flag later in the season, and consequently a lesser degree of humidity, it is quite likely that a late-sown crop would be less severely affected than would an early-sown one.

Conditions Favouring Humidity

As humid conditions are favourable to the growth of Eye-spot, the question of conditions favouring humidity deserves consideration.

The main factor influencing humidity is that of climatic conditions. This is, of course, unalterable. Humid conditions, however, may be accentuated by other factors.

A heavy undergrowth of weeds such as chickweed, fumitory or wild turnip tends to keep the lower portion of the crop in a humid condition. A heavy dense crop will also tend to increase



Fig. 4—Typical Eye-spot infection on straw.

the humidity. The following occurrence bears this out. A portion of a crop was, in the early stages, thinned out very considerably by birds. The incidence of Eye-spot was slight in this portion, whereas the rest of the crop was severely affected.

It would, however, be unwise to reduce the rate of seeding merely in the hopes of combating the incidence of Eye-spot, as a sufficient reduction in the seeding rate would in itself probably result in a much reduced grain yield.

Control Measures

Present knowledge of the disease indicates that the following precautionary measures should be taken in areas

subject to severe infection by Eye-spot disease:—

1. Sow next year's wheat on ground that has not grown an infected crop this year. Avoid land on which wheat or barley has been recently grown.
2. All seed harvested from infected crops should be used for milling or feed purposes only.
3. Burning of the stubble of infected crops will tend to reduce re-infection.
4. Distribution of straw from infected crops should not be practised, as it will carry the disease to non-infected land.
5. Continue to sow Cross 7 wheat, since it is still the most suitable wheat variety for the Taieri. No information is available indicating that any other variety is less susceptible.

Conclusion

Th severe attack of Eye-spot on the Taieri this season should not be regarded as an indication that a new and severe disease has suddenly appeared in the district, or that wheat production should cease in the Taieri. Eye-spot may have been present for years in a mild form, and the serious outbreak this year was probably brought about by a number of associated factors which may infrequently occur.

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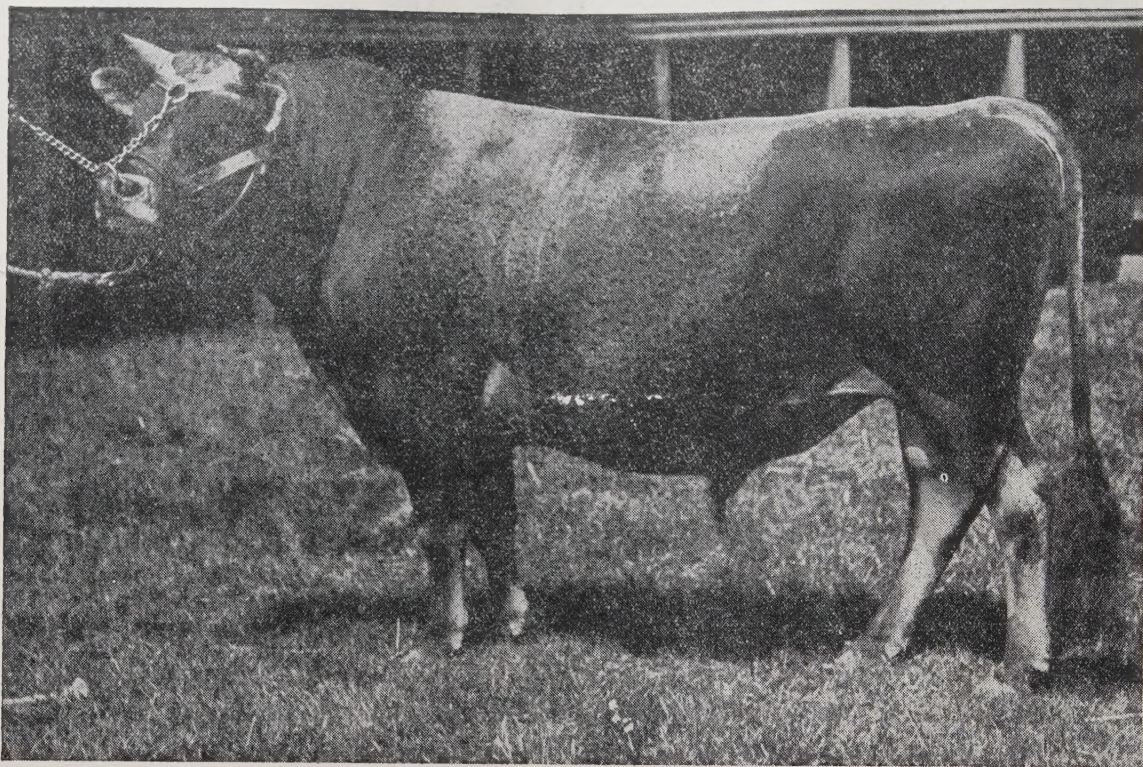
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N.Z. Vegetables for U.S. Forces

IN this article Lt. Francis A. Raymaley, U.S.N.R., of the United States Joint Purchasing Board, pays tribute to the Department of Agriculture for the prompt establishment of the Services' Vegetable Production scheme, and to all workers who, by their efforts, have produced abundant yields of high-grade vegetables. Lt. Raymaley has been in close contact with the Department and has inspected many of the S.V.P. areas throughout the country. In civilian life Lt. Raymaley was Extension Field Agent for the United States Department of Agriculture attached to Rutgers University (New Jersey College of of Agriculture), and stationed at Bridgeton, N.J.

AGRICULTURE to many people is simply a picturesque part of the rural scenery, to be pleasantly observed in touring the countryside. To those who live on, and from the land and its products, it is a mode of life. In reality, agricultural production influences the very existence of society. As the origin of practically all new wealth, the beginning of countless chemical and industrial processes, the creator of employment and the instrumentality of feeding, clothing, and housing the human race, the total story of any nation's basic agriculture is indeed a most interesting one.

So it is in New Zealand—one of the world's genuine agricultural countries. In times of peace agricultural production and its organisation followed a natural economy based on domestic and world markets and the peculiar advantages it possessed in soil, climate and location. But global war is ruthlessly hard on such peace-time economics. Armies are redistributed over

the earth. Men must be equipped, clothed and fed. Invaders must be stopped. While manufactured arms and industrial equipment are paramount, food as a weapon has also assumed new proportions, that is, food in volume of the right type.

Need for Action

Concentrations of New Zealand armed forces in certain areas of the Dominion, and later, the arrival of United States armed forces, created the problem of providing fresh vegetables for these men. Unlike slower peace-time planning, war requires action. That action of getting something done without a moment of lost time was met by the Department of Agriculture through the Services' Vegetable Production scheme.

Without careful inspection and actual visitation it would be difficult to convince a large scale vegetable grower that so much could be performed in such a brief space of time. As an experienced individual in extensive and intensive vegetable culture, and as a close observer of vegetable farming in the United States for twenty years, I can freely state that an extremely fine job has been, and is being done by the Department and its staff concerned with this project.

I am injecting this personal subjective aspect into this statement simply

to bring out more objectively the following contrasts, which for time, soil, and climatic factors alone would not be possible in many of the vegetable farming regions in my country.

Preliminary Planning

In considering the problem of time, thought had to be given to three principle factors:—

1. The rental of several thousand acres of adaptable land located in areas convenient to the market to expedite and facilitate distribution.
2. The assemblage of special machinery, equipment, seeds and supplies, and the formulation of a complete working plan for the job in hand. This was not simply a problem of taking machinery from an existing vegetable industry, but rather one of creating a new and distinct shift in the type of agricultural development.
3. The organising and hiring of trained personnel capable of carrying out production on a large scale. It should be remembered that many of those responsible for these operations were themselves without previous vegetable farming experience.

Soil and Climate

Next, in considering the problem of soil management two factors had to be solved:—

1. Converting hay and pasture land sods into suitable vegetable seed beds in a short period of time. Ordinarily there is a high risk that the decomposition of the plant remnants in the soil may seriously influence the resulting seedlings of certain vegetables. This is a difficult obstacle to overcome under our farming conditions in the U.S.A., where soil improvement demands a sod crop in the rotation. Farmers in my country have learned that with many vegetable crops it is practically impossible to plough under this sod and then proceed to prepare a good seed bed for vegetable production. But

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the foresight used by those responsible for these plantings in a preliminary shallow ploughing, followed by a more complete soil preparation later, gives testimony to the completeness with which this situation was met.

2. Weed growth, a natural expectation following sod or hay land, had to be controlled. Proper spacing of plants and diligence in keeping after the young weeds marks the best methods used.

Coincident with time and soil management consideration also had to be given to climate from two angles:—

1. Some of the larger acreages had to be located in areas where there were natural climatic advantages to the crops, and disadvantages to the insect and disease enemies of these same crops.

2. Rainfall and temperatures for as near year-around delivery as possible had to be woven into the entire production picture.

Abundant Yields

In all these considerations, inter-related as they are, the whole project has been carefully pieced together into a unified production organisation. The skill, preliminary planning, and sound judgment executed by the staff deserves the highest praise. The first year's production figures are, in themselves, full proof of how well all these were handled.

It is certain that if many of our leading U.S.A. growers could visit these farms, they would be deeply impressed, as I have been, with the natural fertility of your soil for vegetable production. They would marvel at the vigour and response your truck crops show to your methods. The completeness of your stand (strike, as you call it), and the abundant yields would be no less than a matter of wonderment to them. This is true of all the common crops now under production.

A Job Well Done

There were some errors and mistakes. The sceptics and critics, as in all such operations, can probably better enumerate the faults. But a big job had to be done—in a short time—and it was done. The necessity of doing something at once, by taking some risks, was vastly more important than the grievous and more fatal common mistake of doing nothing. Fortunately the records confirm the conclusion: a large amount of vegetables already delivered, and more for the coming winter. This convincing proof is further enlarged by the general satisfaction to those for whom the produce was grown.

It is hoped that such a good past record will cause no one to begin resting on his oars. More and more produce will be needed, and in this future production many new problems

HAWERA VEGETABLES FOR SOUTH-WEST PACIFIC

Vegetables from the State gardens in Hawera are being served to the troops of an Allied nation on a south-west Pacific fighting front, according to a letter received by a woman member of the garden staff on Saturday. Last month, when produce was being forwarded to the order of the United States Armed Forces, a packer inserted a slip of paper with her name and address and there was no more surprised person at the gardens on Saturday when she received an acknowledgement dated February 23. The writer said she and his fellows "sure enjoyed" the greens that arrived only that morning and added: "Any fresh food is of good to us so just keep it coming. I am in the United States Navy down in the south-west Pacific trying to make my country and your's a free place in which to live. I see many boys from your country; they talk a little funny but they are easy to understand." The letter has given the workers at the gardens further incentive to get on with their job for they have often wondered how far the results of their labours have travelled for the sustenance of the fighting force. Many North Island camps have been supplied but this is the first intimation that Hawera-grown vegetables have gone overseas to be relished in tropic outposts. The productivity of the gardens is being well maintained in a wide range of vegetables from cabbage, lettuce,

Extract from "Hawera Star," 9/3/43.

will have to be met. Certainly the risk of insect and disease damage will intensify, not diminish. There are the questions of better timing of planting in ratio to total need; more efficient distribution; better grading and packing. Then, too, the influence of this programme on soil conservation and future economy is important. When the same zeal, intelligence, and hard work that went into the first year's efforts are applied to the new year and the new problems, we know that we shall be proportionately rewarded.

Pig Production

THE basis of success in pig production is management. Essential information that will assist farmers towards the adoption of successful management with the ultimate result of better pigs is available in the Department's free bulletin, "Modern Methods of Pig Production." Copies can be obtained from the Department's offices, Wellington, Auckland, Christchurch and Dunedin.

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ESTABLISHMENT OF SERVICES' VEGETABLE PRODUCTION

"THE war and changing agriculture" has already become an established subject of discussion, and among New Zealand wartime agricultural innovations, one unique in purpose and conception is the scheme of Services' Vegetable Production.

In June of last year, when it became apparent that existing market garden facilities could not adequately cater for the full vegetable requirements of both the civilian population and the armed forces, War Cabinet authorised the Minister of Agriculture to establish this scheme to be administered by the Department of Agriculture. The development of the scheme has proceeded according to plans conceived by Mr. P. W. Smallfield, Director of the Fields Division. Thus it has come about that in the instance of fresh vegetable supplies the State, during the period of emergency, has undertaken to produce and distribute the full requirements of the Army, Navy and

— By —

I. D. BLAIR,
Assistant Superintendent,
Services' Vegetable Production,
Wellington.

Above (left)—Projects have been provided with storehouses and staff accommodation by the Public Works Department.

Right.—All projects are mechanised.

Allied forces centred in this country. Prior to the initiation of Services' Vegetable Production, the Air Force had already undertaken to produce its own vegetable requirements, and this arm of the Services has not drawn upon the S.V.P. scheme other than to supplement its own production.

This effort of the Department to produce great quantities of vegetables under field crop as distinct from market garden conditions has naturally aroused interest and speculation, so much so that now seems the time to provide a summary of progress over the first six months' operations. Each of the production areas is in its own way proving to be an experimental area, and following this general introductory account it is expected that supervising officers of projects will contribute accounts of their specific problems, techniques and adaptations, all of which have been part and parcel of the period of establishment.

Establishment

Just as increased food production in Britain has resulted from breaking in of grassland, so in this country grassland areas have been selected for

vegetable projects. In some districts the Department contracted with private growers for the purpose of securing early deliveries covering the period during which projects were being established, but insofar as the departmental areas are concerned, no already established market garden land has been occupied.

Project areas taken on lease have been established throughout New Zealand as follows:—

District.	Acres.	District.	Acres.
Kaikohe ..	53	Wanganui ..	14
Whangarei ..	138	Hawera ..	27
Auckland ..	10	Levin ..	179
Mangere ..	163	Otaki ..	42
Thames ..	71	Greytown ..	96
Ruakura ..	100	Hastings ..	75
Rotorua ..	66	Blenheim ..	52
Tauranga ..	75	Harewood ..	72
Ohakune ..	189	Seadown ..	112
Palmerston ..	10	Totara ..	54
North ..	120	Outram ..	67
Opiki ..			

On each of the above areas a commendable performance has been made in transforming the grassland, for in most cases land was not available for use until July of last year. Nevertheless, all projects came into production by the end of 1942. The urgency of the task called for expediency in land preparation in changing permanent pasture land into

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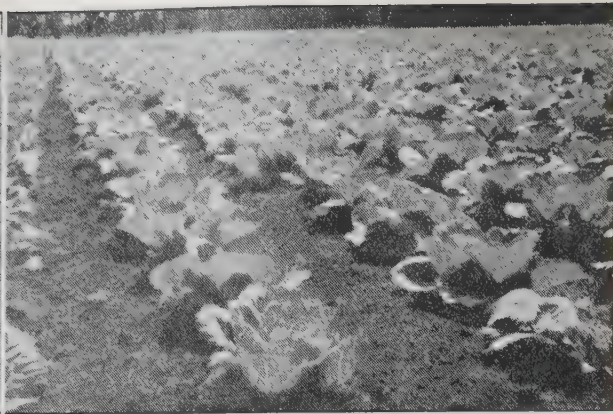
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Left.—A field crop of Dwarf Stringless Greenpod beans. Right.—A crop of summer cabbage which yielded heavily.

intensified arable projects. Equipment had to be procured, clearing up work attended to on subdivided areas, seedlings had to be raised, seeds and manures distributed, cropping programmes and sowings arranged to cover what was then known on Services requirements.

All projects are adequately mechanised, and are provided with the full range of implements required in producing vegetable crops on a field scale. Much ingenuity has been displayed in devising useful and economic adaptations of machinery and implements in use.

Personnel

The general direction of any production district is under the control of a Fields Superintendent or District Horticulture Supervisor, while individual projects are supervised by local officers of the Fields or Horticulture Divisions. Key personnel include the project overseer, storeman-timekeeper, tractor driver, foreman gardener, while the balance of labour has been provided by men and women free to undertake this work of primary national importance. At the end of February the production and harvesting programme was using the services of 500 workers, of whom approximately one third were women. Most of the permanent staff are accommodated on the areas, using buildings erected by the Public Works Department, comprising married men's 3-roomed units and single men's huts with a messing unit.

Production

The first year's programme has envisaged an even monthly supply of all

vegetables in season, and each area has undertaken to produce the complete range normally available for consumption. To the end of February nearly 1300 acres of successional crops had been sown or planted, including a range of proved varieties within the vegetable types. The magnitude of the task is exemplified by the fact that some military establishments in this country are consuming 70,000-80,000 pounds of fresh vegetables weekly. Since January of this year, with few exceptions, the full weekly requirements of Services establishments have been covered by deliveries.

Among the problems which have tended to limit production during the first season labour deficiencies have been prominent, although much seasonal harvesting has been facilitated by the yeoman efforts of the Women's War Service Auxiliary, and tribal committees have rendered excellent service in providing Native labour. Insofar as labour is concerned the scheme has not been any more favourably situated than any other primary or secondary production agency. A second limiting factor which is assuming increasing significance relates to field crop disease.

Severe losses have resulted from outbreaks of lettuce drop (*Sclerotinia sclerotiorum*) and slime, bean anthracnose (*Colletotrichum lindemuthianum*), bean wilt (*Phytophthora medicaginis*), tomato blight (*Phytophthora infestans*), clubroot of crucifers (*Plasmodiophora brassicae*). It has become clear that diseases which were of only academic significance under small garden conditions may assume epidemic proportions in the large-scale field environment. As the enlarging cropping programmes develop, every aspect of disease preventative technique will have to be applied, including full utilisation of the methods of crop rotation, soil rejuvenation, seed disinfection, crop spraying, and of particular concern in the case of beans, the introduction of disease-free seed.

In general, seasonal conditions from October to February have been fair and conducive to average crop development, and reports to date show clearly that under the large scale conditions existing on Services' Vegetable Production areas yields of vegetables are being obtained which are commensurate with the expectations of the long-established market gardens.

Supply and Distribution

Probably under this category most of the "problems" can be included, but the experience of time is showing that none which have arisen are insuperable. The arrangements include collection of daily requirements by military units close to production areas, or delivery from the project to the supply point by rail. With the latter procedure is associated the difficulties in co-ordinating harvesting of large quantities with railway timetables; also problems in the maintenance in circulation of adequate stocks of all types of produce containers.

Deliveries commenced from all projects in December, 1942, and in four months ending in March, 1943, the following pounds weight of vegetables had been delivered to military establishments from projects alone.

Project.	Lb.	Project.	Lb.
Ohakune	735,303	Otaki ..	237,656
Mangere	614,657	Thames	228,200
Levin ..	493,796	Whangarei	215,750
Harewood	408,270	Hawera	207,794
Greytown	404,840	Tauranga	151,465
Blenheim	346,002	Kaikohe	119,070
Ruakura	336,680	Palmerston	
Hastings	299,990	North	108,733
Opiki ..	295,489	Outram	100,909
Rotorua	264,127	Wanganui	35,362
Seadown	262,098	Auckland	10,459
Totara ..	248,982		
Total ..			6,125,632

Contractors have also delivered large quantities over the same period of time, to an extent which brings total deliveries of the scheme during the first four months to well over 8

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has many uses on the farm. Instruction in the mixing of concrete and guidance as to its use is contained in "Concrete on the Farm" (bulletin 184) issue free by the Department of Agriculture, Auckland, Wellington, Christchurch or Dunedin.



Left.—Over 800,000 pounds of peas have been delivered to the Services in three months. *Right.*—For the Army's use in winter—a Guerande carrot crop.

million pounds of vegetables. Of the deliveries made to the end of March from projects alone the distribution among individual vegetables was as follows:—

Vegetable.	Lb.	Vegetable.	Lb.
Cabbage	1,817,953	Swedes	178,914
Peas ..	843,336	Cauliflower	159,749
Tomatoes	440,614	Cucumber	87,642
Beans ..	413,154	Pumpkin	74,414
Carrots	410,490	Green	
Lettuce	384,310	onions	73,804
Turnips	336,070	Spinach	47,060
Beetroot	328,773	Sweet corn	39,520
Silver beet	230,248	Rhubarb	25,132
Marrows	209,199		

and smaller quantities of asparagus, celery, parsnips and radish.

Overseas Supply

The scheme as originally conceived planned for greater Services' requirements in New Zealand than at present exist. Surpluses over and above requirements in this country are being shipped to the United Nations forces in the South Pacific, and up to the end of March, 1943, approximately 2,208,000 pounds of fresh vegetables had been

thus shipped from Services' Vegetable Production areas in the North Island. The magnitude of the task which confronts the Department's officers at the point of shipment would not be generally appreciated at present, but when the details of this work are unfolded at a more propitious time, credit will be due to those who have been responsible for organising overseas supply.

Until October of this year surpluses if they occur will be distributed to the same source. From that time onward the scheme has undertaken to supply to the Pacific war zone increased quantities of fresh vegetables. This undertaking, which it is emphasised relates to fresh produce and not dehydrated or canned supplies, is to be produced from an additional 3,000 acres of land which at present is being selected, and on which projects will be expanded or established following the procedure already outlined. The task ahead warrants the employment of expert personnel in every branch of the work, and with this in mind a "school" has been established at the Ruakura Animal Research Station,

where men and women will profit by recent experience at that station, and there become fully acquainted with the problems and intricacies of Services' Vegetable Production.

Acknowledgments

It is emphasised that this account is merely a tabulation and analysis of facts. Credit for the establishment of these facts of production and distribution is due to those field and clerical officers whose strenuous efforts have resulted in a noteworthy accomplishment.

The photographs have been provided by Mr. N. Lamont, Instructor in Agriculture, in charge of the Greytown project.

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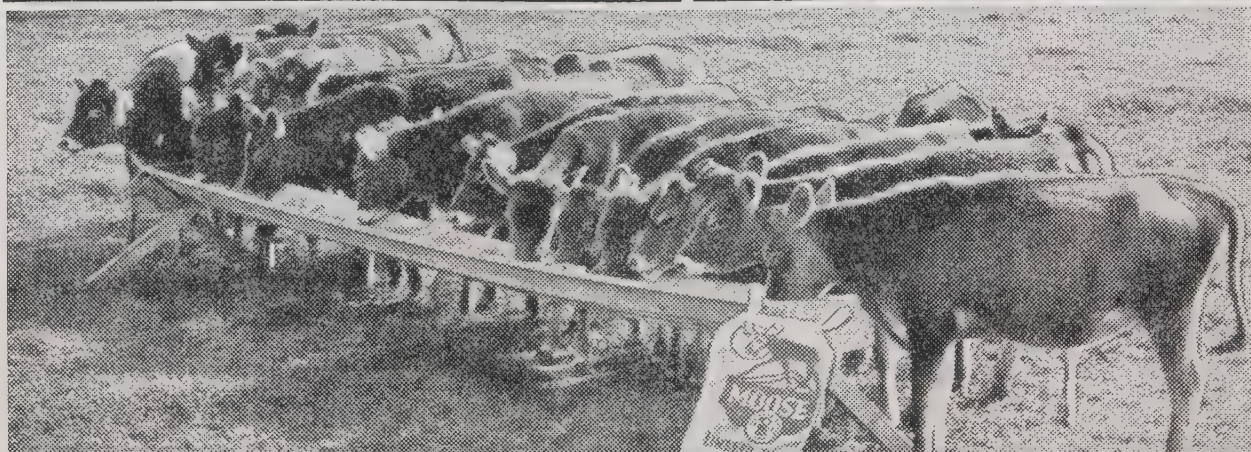
neglect disease and pests in the orchard. The Department of Agriculture will post you the free bulletin on the control of orchard diseases and pests by spraying.



Left.—Maori workers have materially contributed to the labour problem. *Right.*—Runner bean production.



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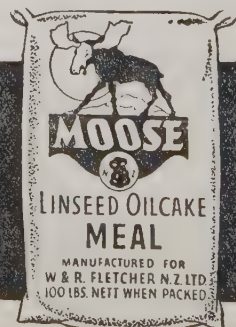
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PRAIRIE GRASS FOR SUPPLEMENTARY FEED

best when other grasses appear at their worst—a time when natural green feed has famine values—Mr. W. D. Farr's claim does not seem by any means unduly extravagant.

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THE ability of prairie grass to make luxuriant growth in winter and spring has long been appreciated by practical farmers. Its manifold virtues have also been extolled in writing, and farmers have frequently been advised to grow it as a special crop for out-of-season feed.

Despite much propaganda, however, the area under prairie grass is surprisingly small. The reasons given for this are generally well known. Prairie grass is easily uprooted and is also keenly relished by stock, so that when grown in a mixed pasture it readily falls a victim to uncontrolled selective grazing, particularly when the ground is soft. The fact that it is not perennial in habit also places prairie grass at a disadvantage when competing in a mixed sward.

That the unique potentialities of prairie grass can be successfully exploited under proper management has been repeatedly shown in many districts; and that it can succeed almost to the limit of perfection in North Auckland has been excellently demonstrated on the farm of Mr. W. D. Farr, Port Albert.

Like many farms in the North, Mr. Farr's property grows excellent paspalum. The proportion of ryegrass throughout the pasture, however, is not high, and, since the heavy nature of the soil causes it to warm up but slowly after winter, these two factors combine to make the spring growth somewhat tardy.

Prairie Grass the Answer

If only he could find a grass which would grow as well in the winter and early spring as paspalum does in the summer, Mr. Farr considered that his main feeding problem would be well on the way to solution. The obvious answer was "Prairie grass." Theoretically, this grass should provide an ideal bridge over a difficult feed gap at a

very critical period when natural green feed has a tonic value out of all proportion to its quantity.

It remained only for Mr. Farr to work out a system of management which would enable him to retain a worth-while proportion of prairie grass in the sward over a period of years. Just how well he has succeeded has been reflected in his factory returns, and, incredible as the figures might appear, Mr. Farr emphatically claims that an area of 6 acres in prairie grass has consistently been worth about 3,000 lb. of additional butterfat on the annual turnover.

Fails in Mixed Sward

When deciding to give prairie grass a trial, Mr. Farr was well aware of the futility of trying it out in a mixed pasture sward. This procedure had been attempted too often in the past,

and had invariably ended in failure. If the prairie grass were to have a reasonable chance of success, he considered that it must be grown as a special crop under a specialised system of management. Moreover, for general convenience he decided that the area should be handy to the shed and not too large. It was desirable also that the ground should be fairly level and reasonably fertile.

Fortunately, such an area was already available. At one time Mr. Farr had regularly grown maize and chamoellier for supplementary feed in a small six-acre field adjacent to the shed. This land had been cropped for several years past, so that the soil had been enriched by residual manure, and was in a condition to be easily worked up.

Preparatory Cultivation

Special attention was devoted to the preparatory cultivation, Mr. Farr firmly believing that half the battle for a successful pasture should be fought and won before the seed is sown. When the seed bed was as clean and as perfect as work could make it, the prairie grass was broadcast at 60 lb. per acre along with 3 cwt. of phosphates, while the soil was still warm early in the autumn.

Prairie grass seed is large and is rather difficult to cover. If left uncovered, severe damage results from bird attack, and much of the seed may also fail to establish in the event of dry weather. For this reason, the seed was well disced in after sowing.

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Special Topdressing

Contrary to general custom, no red clover was sown, it being Mr. Farr's belief that this might compete with the prairie grass for establishment and might also make the utilisation of the grass more difficult. To compensate for the lack of clover, however, special provision was made for topdressing the area with liquid manure to ensure a plentiful supply of nitrogen. This special topdressing is one of the cardinal features of the system, and has undoubtedly contributed greatly towards its success. In these days of restricted topdressing it is interesting to note that, apart from the initial dressing of 3 cwt., no phosphatic fertiliser has since been applied.

Routine Management

Mr. Farr's system of management, like his pure sowing of prairie grass, is somewhat unorthodox and is based mainly on personal observation and experience. In this, perhaps, lies one of the secrets of its success.

The field is normally closed up some time in April and receives a liberal dressing of shed washings mixed with waste skim milk. Throughout the

winter it is left ungrazed. When the cows begin to come in in the spring, sufficient prairie grass is cut each day to provide for the increasing needs of the herd. In practice Mr. Farr finds it more satisfactory to use a scythe rather than a mower, as, if more than two days' supply is cut at one time, it tends to become mouldy and is not relished by the stock.

After the spring, feeding is discontinued and the cows are then turned in for about half-an-hour's grazing in the evening, provided the ground is not too wet. This point is important, as it has been found that grazing during wet weather is highly detrimental, since the prairie grass is so easily uprooted and also suffers badly from trampling.

Towards September or October, when other feed has become plentiful, the field is once more closed up and is again treated with shed washings. The growth is rapid and soon provides a heavy crop of hay which is gathered towards the end of December. Mr. Farr deliberately leaves the mowing until the plants are ripening the seed, and, since prairie grass is not fully perennial in habit, it is obvious that this opportunity to re-seed must

play a vital part in prolonging the life of the stand.

After the hay has been cleared, the field is occasionally grazed over, care being taken to see that it is at no time over-stocked or grazed too close. Towards April, the area receives another dressing of liquid manure, and is again closed up to begin another cycle of growth.

The general system of management is extremely simple. It is unfortunate, however, that as a result of the field being kept closed up over the winter for a number of years in succession, Yorkshire fog has gradually tended to increase and is now competing strongly with the prairie grass. Paspalum, too, has come in freely, but as this grass flourishes best during the dormant period of the prairie grass and dies down completely during the winter, it may be regarded as being complementary rather than competitive. Nevertheless, although the weeds and volunteer grasses are slowly gaining, the prairie grass is still dominant. The stand has already given five years of valuable service, and it appears capable of lasting for a few more years.

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Diseases of Growing Pigs

THE importance of laying a sound foundation of health in the early weeks of the pig's life, and the influence of correct feeding and management in the weeks just after weaning have repeatedly been stressed as the main factors in disease reduction, and no apology is made for repetition. Some of the commoner troubles will be dealt with individually, but it is more important for the pig farmer to be thoroughly conversant with the principles of feeding and management, than to have an extensive knowledge of disease.

The surest way to control disease in pigs is by attention to the following points: Prevention of overcrowding and overfeeding, avoidance of constipation and scouring; regularity in feeding with variety in the diet, and provision of roughage or green feed where necessary; sanitation, drainage, and hygiene; oiling to prevent lice and mange; prevention of checks in young growing pigs, particularly at weaning; prevention of extremes of temperature, by shade in the summer, and provision of ventilated but draught-proof housing adequate for the number of pigs; maintenance of bloom and regular growth. This aspect of the fight against disease in pigs cannot be too strongly stressed.

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Careful observation and immediate isolation and treatment of any sick pigs are important. Isolation of the sick pig in the early stage to prevent spread of infection to other healthy pigs should be applied promptly and with judgment. Isolation of recent purchases until it is clear that they are not disease carriers, and the

Contributed by the
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slaughter and burial of all chronically sick pigs are likewise important. Unless there is good reason for a post-mortem examination carcasses of dead pigs should be buried or burned without opening, as this might tend to further distribute infection.

Suipestifer Disease

This is the commonest disease of young pigs after weaning, and in its various forms is the cause of most deaths. While to some extent a dirt disease, it may be seen under reasonably good conditions, and is a result of intensified pig farming with the concentration of large numbers of pigs on small areas, and consequent increase of soil contamination. Indications are that the recovered pig, and to a greater extent the chronic case are the chief sources of infection. The disease may be present unrecognised in the piggery, when some occurrence such as a sudden change of temperature or feed, which lowers the resistance of the pigs, will cause an outbreak of disease. It occurs mainly in three forms—

Lung infection: This is, in effect, congestion of the lungs or pneumonia, and is the commonest type. Affected pigs may show high temperature and depression, hurried jerky breathing, nasal discharge, a characteristic bluish discolouration of belly and inside of thighs, and condition is quickly lost. Pigs dead from this form have most of the lung tissue solid and unable to function.

Bowel infection: The disease affects the small and large intestine. On post-mortem examination there may be found a general reddening, or there

may be scattered ulcers, or much of the large bowel may be markedly thickened and covered on the inner surface with layers of what looks like dead tissue. The stomach lining may show an acutely inflamed dark red patch. Symptoms are fever, discolouration of skin as above, diarrhoea, loss of condition, and a gaunt skinny appearance.

Acute (Septicaemic) form: In this type the infection is virulent and distributed throughout the system. Deaths occur rapidly, perhaps before definite symptoms, beyond fever and depression, are noticed. Pigs in apparently quite good condition may be found dead. In outbreaks of this form veterinary advice should be sought, as such symptoms might be due to poisoning or one of several diseases.

Treatment: There is no specific treatment. In the lung type affected pigs should be isolated in a warm but ventilated sty and fed a light diet including a little whole milk. Drugs of the sulphanilamide type have given good results. For the intestinal type which is less amenable to treatment give a dose of raw linseed oil in the feed, and sprinkle a little slaked lime in troughs.

For general control, attend to points mentioned earlier. Kill and bury any chronically affected wasting pigs; where cases continue to occur it may be necessary to close certain runs, or to make a complete change to a clean area. The infection tends to die out if runs can be left empty for some weeks.

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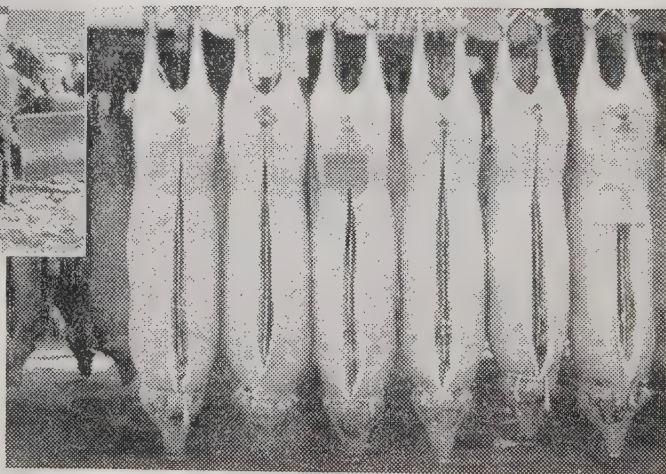
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Infectious Pneumonia

This disease, sometimes called *pasteurellosis*, is, except by bacteriological examination, almost indistinguishable from the lung form of the previous condition, and for practical purposes should be handled in the same way.

Necrotic Ulcers

Where the infection causing these is present any wound is liable to be contaminated, hence these ulcers may occur on any part of the body. Thorough scrubbing of the affected parts with soapy water to remove most of the dead tissues, followed by dusting with tartar emetic, not oftener than once a week, gives good results. Avoid causes such as barbed wire, overcrowding and fighting at troughs, which frequently lead to wounds. Dirt favours the infection. It may attack castration wounds, causing the formation of unsightly swellings, and possibly the later condemnation of the carcase. Newly castrated pigs should be kept under strictly clean conditions.

Arthritis

Arthritis is inflammation of a joint. In pigs most cases are due to germs of some type reaching the joint via the blood streams or lymphatics. Swine erysipelas has been found to cause a percentage. Other infections may enter the system via the navel at birth. Less important causes are injuries, due to defective floors, etc., mineral defects such as insufficient lime or phosphate, or lack of balance between these two substances, and zinc poisoning from the use of new galvanised piping for the skim milk or butter milk.

Lameness is the important symptom, and there may be swelling of the affected joint, often the stifle, hock or elbow. If more than one limb is affected the pig lies about a lot, and moves round with difficulty.

No specific treatment can be relied on. With care and good nursing many cases will reach the porker or baconer stage, though the joint injury remains, and may result in grading down or partial condemnation of the carcase. Avoid infection by providing clean runs and quarters; mineral deficiencies are unlikely where the diet includes a reasonable amount of milk, otherwise some lime should be available.

Parasites

Internal parasites include lungworms, stomach worms and the small red stomach worm.

Lungworms are present in the small air tubes of the lungs where they cause irritation and coughing, and if in large numbers death from bronchopneumonia follows. The larval stages are found in earthworms in runs, etc., where infected pigs have previously been kept, and other pigs are infected through rooting and eating the earth-

worms. There is no effective treatment. Rooting can be greatly curtailed by ringing, and the inclusion of meatmeal in the diet will reduce the tendency. Badly infested runs should be closed to pigs for at least 12 months.

Stomach Worms: The adult ascarid is a round white worm 8 to 10 inches long, found in the small intestine. Here it may cause some unthriftiness, but most harm is done by the larval stage during its migrations through the lungs and before reaching the gut. Treatment by oil of chenopodium or other reliable remedy in dose according to age is effective. It should not be undertaken except on expert advice and where it is established that the unthriftiness is in fact due to worms, and not to some defect of feeding or management.

Whilst in older lands the ascarid in certain old-established pig-rearing areas has become a menace, this does not apply to many parts of New Zealand. Where the ascarid is prevalent, precautions should be taken against infection of little pigs by scalding out farrowing pens before use, and washing the udders of sows prior to farrowing.

The red stomach worm is a very small hairlike pink worm found in the lining of the stomach. It has been responsible for deaths in mature pigs from haemorrhage following the irritation and ulceration of the stomach lining.

External parasites such as fleas, lice, and the tiny mites causing sarcoptic mange, are readily dealt with by period oiling of the skin.



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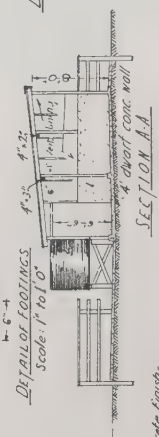
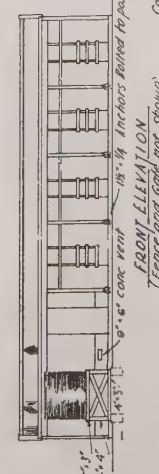
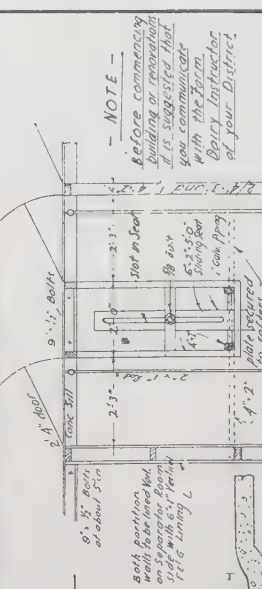
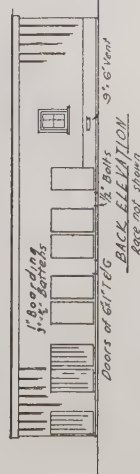
SOUTH BRITISH INSURANCE BUILDINGS, SHORTLAND ST., AUCKLAND

DESIGN FOR WALK-THROUGH MILKING SHED, RACE AND YARDS.

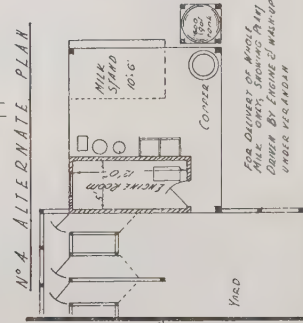
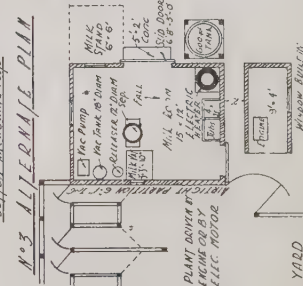
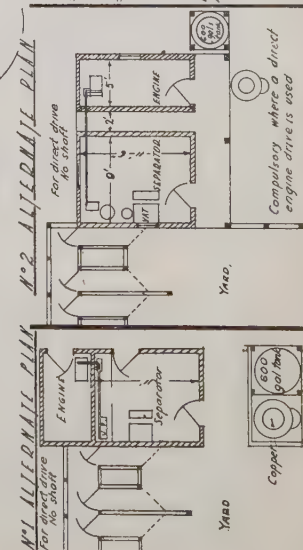
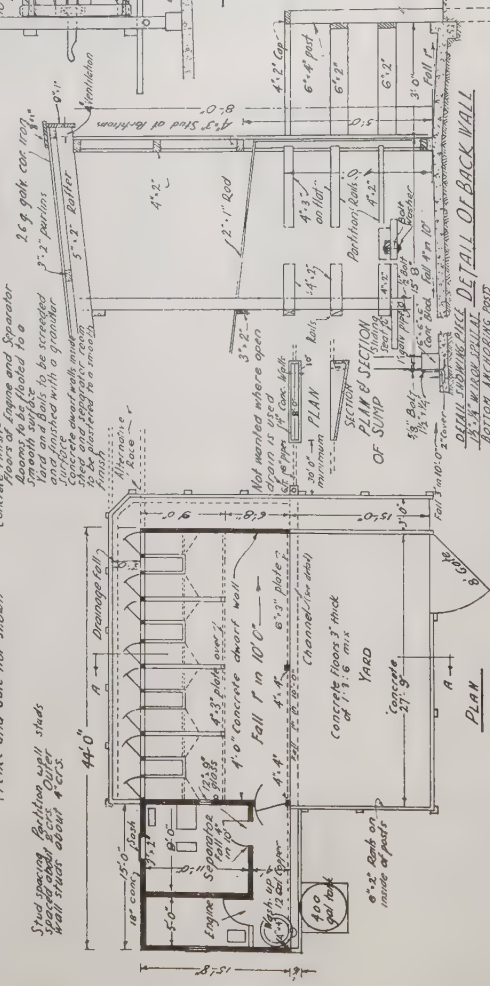
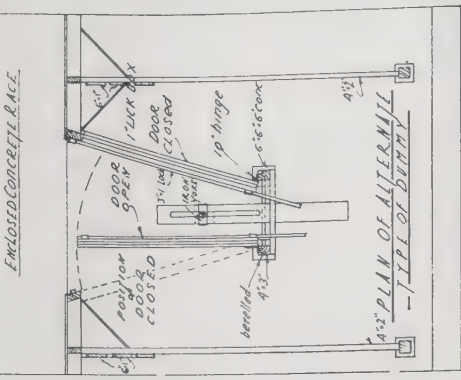
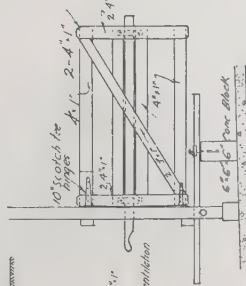
Scales: Plans etc. $\frac{1}{8"} = 1'0"$
Details $\frac{1}{4"} = 1'0"$

DEPARTMENT OF AGRICULTURE
DAIRY DIVISION

NOTE: NOT FOR TOWN MILK SUPPLY



SCALE 1" = 10'
DETAIL OF SUMP CHANNEL



PLAN SHOWING ALTERNATE RACE

The Construction of Milking Sheds

(Continued from April Journal.)

Materials for Shed

Schedule of Quantities, exclusive of Sump.

- 17 0 0 Cube P.C. concrete in floors, walls, etc.—
Cement, 52 bags.
Sand, 8 cubic yards.
Metal, 15 cubic yards.
Supl. boxing (not measured). Use 12 in. x 1 in.
boarding and studs.
No. 2 9 in. x 6 in. vent.
No. 5 1½ in. x ¼ in. anchors, 1 ft. 3 in. long with split
end.
No. 5 ½ in. bolts and nuts, 6 in. long.

Carpenter and Joiner.

- 62 0 Supl. 4 in. x 2 in. B.H.R., plates 2/17 ft., 2/12 ft.,
1/16 ft., 1/18 ft. (shorts).
No. 36 2 in. W.I. bolts, incl. nuts and washers,
9 in. long
460 0 Supl. 4 in. x 2 in. studs, plates, and dwangs (ran-
dom lengths).
No. 7 lengths 1½ in. pipe, 9 ft. long.
180 0 Supl. 4 in. x 3 in. posts O.B.R., 12/9 ft., 9/8 ft.
20 0 Supl. 4 in. x 2 in. O.B.R. plates, 2/15 ft.
30 0 Supl. 4 in. x 3 in. O.B.R. plates, 2/15 ft.
37 0 Supl. 4 in. x 4 in. O.B.R. posts, 4/7 ft.
68 0 Supl. 6 in. x 3 in. O.B.R. beam, 2/15 ft., 1/16 ft.
184 0 Supl. 5 in. x 2 in. O.B.R. rafters, 13/17 ft.
110 0 Supl. 3 in. x 2 in. O.B.R. purlins, 10/22 ft.
80 0 Lineal 8 in. x 1 in. B.H.R. covers, 1/43 ft., 2/17 ft.
80 0 Lineal 9 in. x 1 in. B.H.R. cover, 1/43 ft., 2/17 ft.
Allow for 100 ft. of dampcourse, 4 in. wide.
310 0 Supl. 6 in. x 1 in. T. and G. O.B.R. (gross measure)
net 260 ft.
550 0 Supl. 12 in. x 1 in. O.B.R. boarding, gross (net
500 ft.).
550 0 Lineal 3 in. x ½ in. battens, gross (net 500 ft.).
220 0 Lineal 4 in. x 1 in. ledges and braces to doors.
No. 10 pair 12 in. Scotch T hinges, galvd., and
screws.
No. 2 rim locks.
100 0 Lineal 2 in. x 1 in. door stops.

Railings.

- No. 21 6 in. x 4 in. ht. totara posts, 6 ft. long.
84 0 Supl. 4 in. x 2 in. B.H.R. capping piece, 4/13 ft.,
2/15 ft., 2/11 ft., 2/8 ft., 1/7 ft.
250 0 Supl. 6 in. x 2 in. B.H.R. railings, 4/15 ft., 8/13 ft.,
4/11 ft., 2/8 ft., 4/7 ft.

Windows.

- No. 1 sash, 3 ft. x 2 ft. x 1½ in., glazed 21 oz. glass.
3 0 Lineal 5 in. x 2 in. H.B.R. sill.
16 0 Lineal 1 in. x ½ in. O.B.R. guides or stops, 4/4 ft.
No. 1 2½ in. galvd., bolt, brass shoot.
10 0 Lineal 3 in. x 1 in. facings.
No. 1 sheet 21 oz. glass 12 in. x 9 in.

Gate.

- No. 1 gate, 8 ft. wide, No. 1 3 ft. wide.
24 0 Supl. 4 in. x 1 in. O.B.R., 4/8 ft., 4/4 ft., 8/3 ft.
7 0 Supl. 3 in. x 1 in. O.B.R. 2/9 ft., 2/5 ft.
No. 2 pair gate hinges and gudgeons, 2 in. x ¼ in.
strap. (Top gudgeon with nut and washer,
bottom gudgeon with spike).
No. 9 bolts 3½ in. x ½ in., No. 6 bolts 3½ in. x ½ in.,
complete with washers and nuts.

Sliding Seats.

- No. 4 6 in. x 2 in., 5 ft. long. Slotted 3 ft. O.B.R.

- No. 4 ½ in. bolts, 4 in. long, with nuts and washers.
No. 4 pieces 1 in. galvd. piping, 2 ft. long.

Tank-stand, B.H.R.

- 24 0 Supl. 4 in. x 3 in. plates, 4/6 ft.
No. 4—9 in. x ½ in. bolts, with nuts and washers.
11 0 Supl. 4 in. x 4 in. posts, 4/2 ft.
24 0 Supl. 6 in. x 4 in., plates, 2/6 ft.
44 0 Supl. 5 in. x 2 in. joists and braces, 2/6 ft., 8/5 ft.
30 0 Supl. 1½ in. decking (5 ft. 6 in. lengths).
5 0 Supl. 5 in. x 1 in. stops, 2/6 ft.

General.

- 1 keg mixed nails, ½ in. to 4 in.
Allow for paint and brushes.
44 0 Lineal 4 in., 26 gauge galvanised iron spouting,
5/8 ft. 1/6 ft.
No. 2 stop ends.
No. 1 drop ends.
No. 13 brackets.
8 0 Lineal 2½ in. diameter downpipes, 1/8 ft., 26 gauge.
730 0 Supl. 26 gauge G.C.I. to roof, 25/8 ft., 25/9 ft.
Lead-head nails, half box.
No. 1 12 gallon concrete boiler, complete with
frame and copper.
6 0 Lineal 4 in. concrete flue pipe.
No. 1 tinned lid.
No. 1 600-gallon tank as specified, complete with
overflow and connection for two ½ in. pipes.
No. 8 lengths breeching-chain 4 ft. 6 in. long.
No. 8 Donald wire strainer hooks.
20 0 Lineal ¾ in. water-pipe.
No. 2 ¾ in. low-pressure taps.
No. 1 6 in. gully trap.
30 0 Lineal 6 in. dia. E.W. pipe, seconds, 15/2 ft.

Plastering.

- Allow 1 bag cement.
1 cubic yard sand.

Schedule of Extra Quantities.

(For increasing capacity to five bails.)

- Concrete: 2 cubic yards.
Shingle: 2 cubic yards.
Cement: 6 bags.
Roofing-iron—
4 sheets 8 ft. corrugated iron.
4 sheets 9 ft. corrugated iron.
Spouting—
1 8 ft. length 4½ in. ¼ round.
2 spouting brackets.
Hinges 2 pairs 12 in. Scotch T's.
Bolts—
2 9 in. x ½ in. with washers
2 6 in. x ½ in. W.I. dowels.
2 W.I. screw eyes.

Timber—

- Boarding, 12 x 1; 32 sup. ft.
Battens, 3 x ½; 25 lin. ft.
Plates, 4 x 2; 1/2, 1/7.
Studs, 4 x 2; 2/8.
Studs, 4 x 3; 1/8.
Dummy studs, 4 x 2; 2/8.
Posts, 4 x 3; 1/7.
Posts, 4 x 4; 1/7.
Dummy plate, 3 x 2; 1/7.
Dummy plate, 4 x 3; 1/7.
Plate, 6 x 3; 1/7.
Dwangs, 4 x 2; 10 sup. ft.
Rafters, 5 x 2; 2/17.
Purlins, 3 x 2; 6/7.

Barges, 8 x 1; 2/7.
 Doors, T. and G. 6 x 1; 10/5.
 Doors, 4 x 1; 2/10.
 Dummy bails; 4 x 2; 6/4, 3/2.
 Part bails, 4 x 2; 1/9.
 Part bails, 4 x 3; 2/9.
 Yard rails, 4 x 2; 1/7.
 Yard rails, 6 x 2; 2/7.

The following reduction in the materials will be made if the engine-room is omitted.

2/3 cubic yard concrete.
 3/9 in. x 1/2 in. bolts.
 59 superficial feet 4 in. x 2 in. plates, studs, and dwangs.
 25 superficial feet 5 in. x 2 in. rafters.
 12 superficial feet 3 in. x 2 in. purlins.

72 superficial feet 6 in. x 1 in. lining boards.
 20 superficial feet 6 in. x 1 in. lining boards for door.
 49 superficial feet 12 in. x 1 in. vertical boards.
 56 lineal feet 3 in. x 1/2 in. battens.
 14 lineal feet 4 in. x 1 in. battens for door ledges and braces.
 5 lineal feet 8 in. x 1 in. cover board.
 5 lineal feet 9 in. x 1 in. cover board.
 5 lineal feet 6 in. x 3 in. plate.
 3/8 ft. and 3/9 ft. G.C. iron.
 5 ft. spouting.
 5 lb. lead-head nails.
 2 spouting brackets.
 17 lineal feet dampcourse.
 1 pr. Scotch Tee hinges.
 1 rim lock.

Extracts from the Dairy Industry Act and Regulations

The following extracts from the Dairy Industry Act, 1908, and various clauses of the General Regulations are quoted for general information:—

Section 2 (a) and (b).—"Dairy" means any place where milk is collected, separated, &c., any farm, milking-yard, paddock, shed, &c., and any other place where cows from which the milk-supply of a dairy is obtained are depastured and kept.

It will thus be seen that the word "dairy" has a very wide application, and covers the whole of the premises of a dairy factory or any farm supplying it.

Sections, 5, 6, and 7 deal with inspection of dairies, and the powers of the Inspector to deal with defects are as follows:—

Where an Inspector finds that a dairy is in an unclean or unwholesome condition, he may require such defects to be remedied, &c., and may, among other things, forbid the removal of any dairy-produce for such time as he thinks fit.

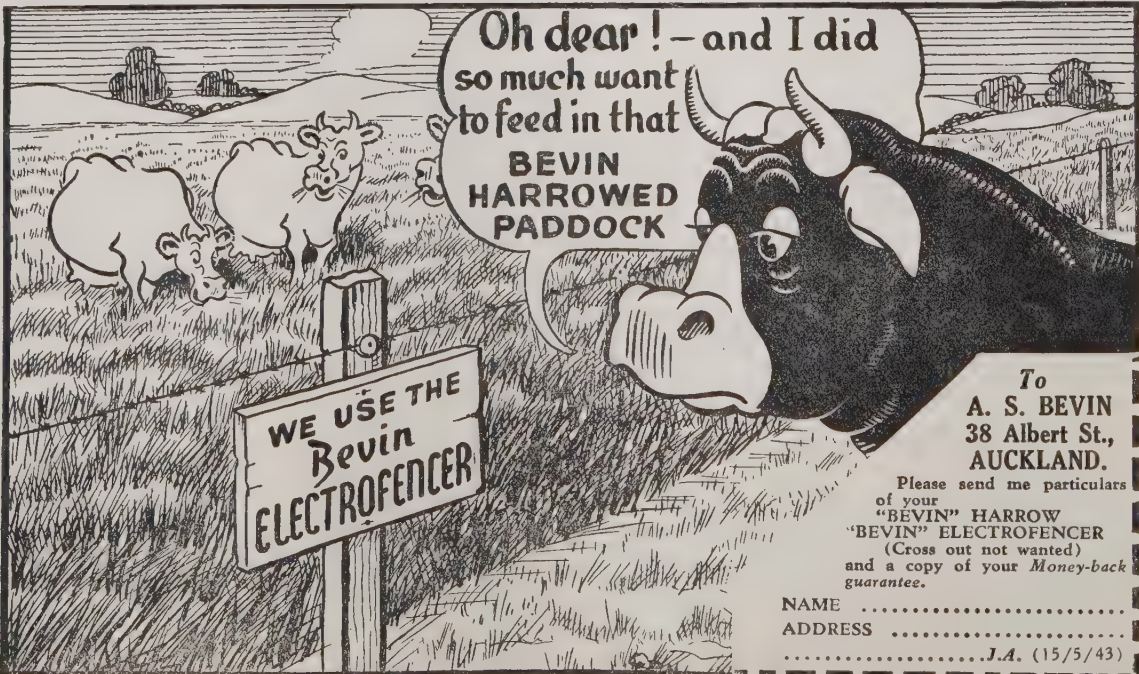
In this connection it should be noted that every officer of the Dairy Division is, when appointed, gazetted as an Inspector under the Act, and exercises his powers as the result of that ap-

pointment. His right of entry to the dairy, including the farm, is safeguarded by section 5, under which he may at all reasonable times enter, inspect, and examine any dairy, any stock, utensil, machinery, &c., used in connection with a dairy, &c.

Section 10 further requires the owner to furnish any personal assistance to enable the Inspector to search for any source of contamination to which dairy-produce may have been exposed.

An amendment and addition to section 6, which was made in 1926, provides for objection to be taken by the Inspector to any structure or other thing situated in the neighbourhood of the dairy which may contaminate any dairy-produce produced in it.

Section 8 provides that an Inspector may condemn any dairy-produce which he considers to be unfit for human con-



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sumption, and such notice must be given in writing.

Section 9 provides that diseased stock must be kept separate from healthy stock; that milk and cream from diseased stock must not be sold or used for food; that persons suffering from contagious or infectious disease must be kept isolated.

Dealing with the surroundings of the dairy, *section 12*, as amended in 1926, provides that no person shall keep, house, or allow pigs to wander or be brought within 50 yards of any dairy or the open water-supply thereof; that any fowlhouse, manure-heap, cess-pool, or closet must be 30ft. away from any dairy or yard; that open drainage from stock or pigs must not flow within 50 yards of a dairy or yard or of the open water-supply thereof.

Section 15 provides that no person shall sell or supply to a dairy, or to any person for any purpose, milk or cream which is tainted, which is drawn from a cow which is suspected or known to be diseased, or that has calved within four days before the day on which it was drawn.

It will be noted that sections 9, 12, and 15 are mandatory and prescribe the things which must not be done. In these instances the Inspector has no discretion allowed him.

The one most frequently broken is *section 12*, and the attention of dairy-farmers is especially drawn to prohibitions regarding the housing and wandering of pigs near a dairy, and the disposal of drainage from these and other farm stock.

In *section 15* the responsibility for the sale and delivery of tainted milk or cream to a manufacturing dairy or person is clearly placed on the supplier, but it could be argued that the manager of a factory at which it is accepted is liable by implication.

Paragraph (e) of *section 23* is the authority under which regulations are made covering the condition of the dairy and appliances, the installation of the milking-plant, the provision of efficient supplies of hot and cold water, and everything having any connection with or likely to contaminate the milk or cream produced in it. It also covers many other points in connection with both supplying and manufacturing dairies.

The following is a very brief summary of the regulations:—

Regulation 3.—(2) A concrete wall 4ft. high and with a smooth finish must be provided at each end of the milking-shed and a draught-proof wall between the shed and the releaser-room. A concrete floor is required in every milking-shed and milk-room.

Regulation 3.—(9) No person shall, except with the approval in writing of the Director, use as part of a supplying dairy any milking-shed or yard erected

within a distance of 2 chains from any public road.

Regulation 4.—(2) Releaser and vacuum tank must be in the open air or in the releaser-room.

(3) The engine and any fuel water-heater must not be placed in the releaser-room.

(7) All milk and air pipes and fittings must be of tinned brass.

(8) And must be amply supported by brackets.

(9) Shall have a fall to the releaser.

(11) An adequate supply of hot and cold water must be provided at the shed.

(12) Electric heaters shall be according to schedule.

(13) Second-hand milking-machines must be inspected before re-erection.

(22) All rubberware must bear the maker's name.

*Regulation 5.—*All utensils used in a dairy must be properly washed and scalded immediately after use.

Regulation 10.—(1) Strong-smelling disinfectants must not be used on cows' teats.

(2) All utensils must be properly cleaned.

(7) Milk and cream must be protected from the entry of vermin.

*Regulation 11.—*No cream or skimmed or partly-skimmed milk shall be added to milk.

*Regulation 20.—*No person shall deliver and no manager accept milk or cream which—

(1) (a) Is affected with decomposition.

(b) Contains or has contained any bird, maggot, rodent, or other animal.

(2) (b) No manager shall accept any milk or cream which is flavoured with any disinfectant, kerosene, or other strong-smelling substance.

(c) Is unfit for human consumption.

(3) (a) Is unfit for the manufacture of second-grade butter or cheese.

(b) Would reduce the grade of the butter or cheese manufactured.

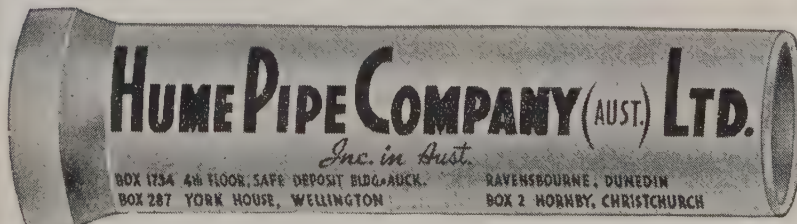
(4) He shall colour milk referred to in clause (2) with methyl violet, and may also colour any referred to in paragraph (a) of clause (3).

From what has been written it will be realised that there are many points which require to be considered before proceeding with the erection of a milking-shed or the installation of a milking-machine, and in order to avoid errors those intending to do so are again urged to get into touch with the Farm Dairy Instructor for their district before the work is started.

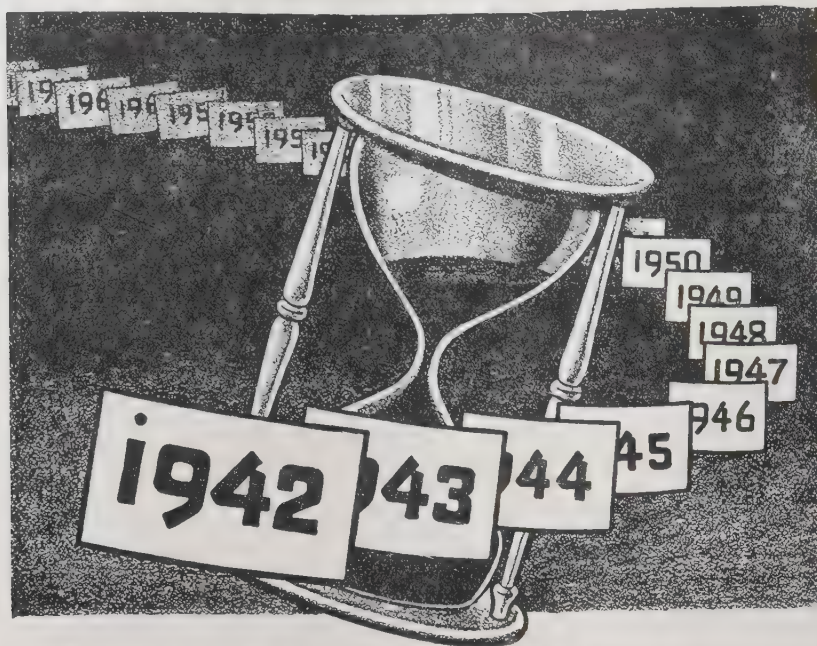
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Winter Grazing

Importance of Good Management

ON most farms the production season ends with the autumn, and the cows and pastures alike enjoy a spell of rest through the winter months, but even at this period there is still plenty of work awaiting the farmer.

Although most of the cows are no longer in active production, and the pastures are making but little growth, the winter is actually a critical period for both. At this, even more than at other times, good or bad management will reap its appropriate reward, though the actual gathering of the harvest may be deferred until the following season.

While improved breeding practice may have done much to improve the milking qualities of our herds, science has done nothing to reduce the need for adequate feeding. At the best, the cow can only give according as she receives.

Foresight Important

The majority of farmers recognise the need for generous feeding through the winter, but the problem is to reconcile the ever-pressing needs of the herd with the dwindling growth of the pastures. Considering that about two-thirds of the grass growth is secured in about one-third of the year, it is evident that provision for winter feeding should be planned well ahead. A good reserve of supplementary feed enables the farmer to utilise the limited amount of natural grass available to the best possible advantage, and

actually results in more grass being produced during the winter period.

Good Management

Many farmers are heard to comment on the remarkable winter growth observed on certain farms. Sometimes

— By —

P. S. SYME,
Instructor in Agriculture,
Warkworth

this is largely associated with natural soil conditions, but much more frequently it is the reward of good management **over a period of years**. Apart from climate and soil type, winter growth is largely a question of fertility, and where the fertility has been built up to the required level, a vigorous rye-white clover pasture can make a very appreciable contribution to the winter feed supply. Paradoxical as it may appear, such a pasture provides most grazing when the grazing is not too hard.

Each Plant a Factory

For practical purposes, a plant leaf may be regarded as a factory for utilising sunlight. Up to a certain point, the greater the area of leaf surface exposed, the larger will be the factory and the faster the rate of growth. Close grazing reduces the

area of leaf exposed, and if persisted in too far, results in a complete stoppage of natural growth. In order to form the new leaves necessary for natural growth, the plant draws on material in its root tissues, so that under a system of persistent grazing this constant defoliation results eventually in weakly, debilitated plants which are unable to compete with inferior grasses and weeds, and which do not properly recover until well into the spring.

It is obvious that if a pasture is allowed to grow till about 6 inches high and then grazed down quickly, shut up and again permitted to grow to about 6 inches before being grazed, this practice will at the same time combine the maximum exposure of leafage with the minimum damage from defoliation, and will result in greatly increased per acre production. This principle is, in fact, the basis of the system of rotational grazing which is now adopted on so many of our high producing dairy farms, and which has done so much to increase the national production of dairy products.

Hard v. Light Grazing

While the principle of spelled rotational grazing, particularly through

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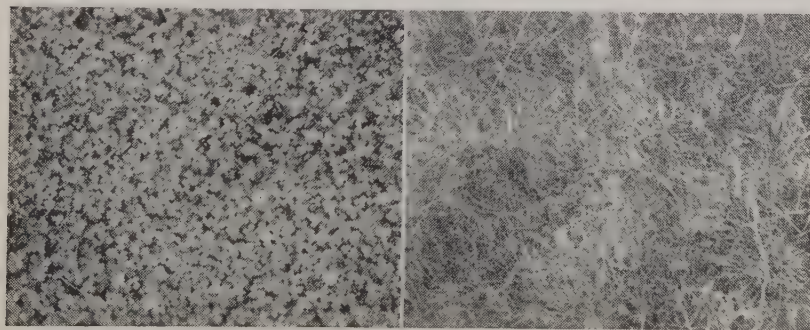
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Left: Persistent over-grazing through the winter tends to produce a clovery type of sward in the following season.

Right: Too lenient grazing tends to suppress the clovers and encourage the grasses, which later suffer from lack of clover nitrogen. Note how grasses predominate to the almost complete exclusion of the clovers.

the winter, is an important one, it must be practised with discretion, otherwise the balance of the sward may be completely upset. Every farmer has at some time noticed how the grass to clover ratio of a pasture sward appears to pass through dif-

ferent phases. In some years there appears to be a marked predominance of grasses and a corresponding deficiency of clovers. The lack of clovers is quickly reflected in the reduced vigour of the grass elements, owing to a deficiency of the nitrogen nor-

mally supplied by the clovers. On the other hand a marked excess of clovers over grasses results in a greatly reduced yield of feed per acre and is apt to be accompanied by serious trouble from bloating.

To obtain the best results a certain



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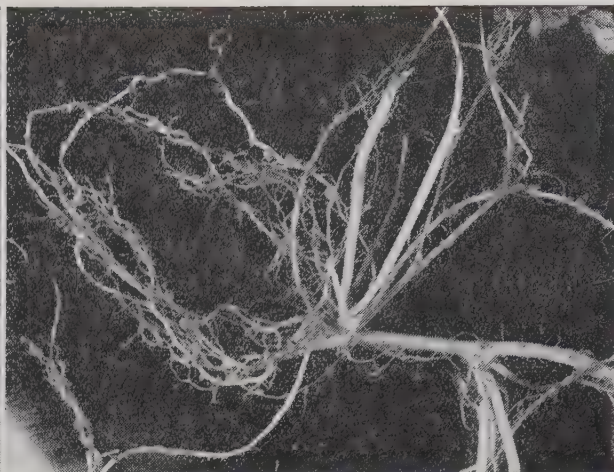
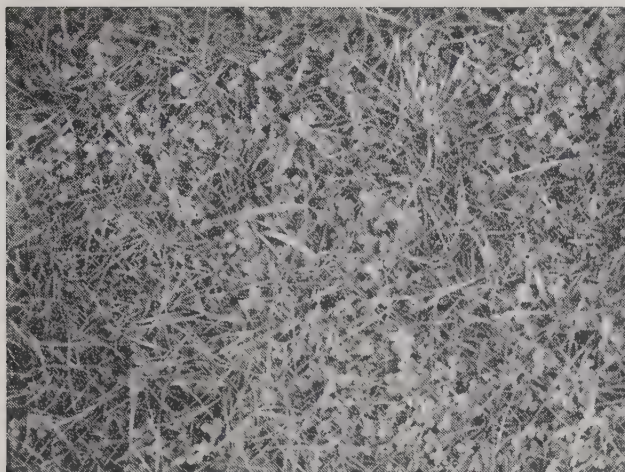
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Left.—A well-balanced and highly productive rye-clover pasture. *Right.*—The nitrogen factory of the farm. The nodules seen on the roots of the clover supply the plants with nitrogen and leave a surplus for the grasses.

balance must be maintained between the amounts of grass and clover present, and this in turn is best achieved by suitable grazing management. Hard and persistent grazing on fertile soil tends to increase the proportion of clover, while lenient grazing, by shading the clover, tends to result in a grassy type of sward during the following season. For this reason, it is usually good policy where practicable to select in advance those paddocks which will benefit most by either hard or light grazing, and to arrange the stocking accordingly.

Apart from the consideration of influencing the grass to clover ratio of certain pre-selected fields, the grazing management should aim at the general improvement of the farm pastures as a whole, and in this connection it must be remembered that whether the grazing—severe or lenient—does positive good or actual harm, depends largely on the type of pasture, the condition of the ground, and the rate of stocking.

Method of Grazing

Obviously a young pasture should preferably be leniently grazed with light stock, highly concentrated if possible, when the ground is reasonably dry. Provided care is taken to graze the grass element sufficiently to allow daylight to reach the young clovers and prevent smothering, nothing but good will result. Excessively light grazing, particularly on fertile land, can sometimes be as harmful as overgrazing, and the happy medium is much to be preferred to either extreme.

Again, where natural green feed is scarce, it may be necessary to ration a certain field, allowing stock access for only a short period each day. This is particularly important in wet weather where the land is liable to pug under prolonged stocking. Wherever a good well-balanced pasture is

being grazed, the stocking should if possible be sufficiently concentrated over the area to permit of quick, even, and never too prolonged persistent grazing, so that the winter growing ryegrass can recuperate without having to draw upon its root reserves. This means in practice that the winter grazing should not be closer than about 2 inches. If grazed too close, the period needed for recovery is greatly prolonged, the total feed which the field can provide over the winter period is thereby disproportionately reduced, while the valuable early spring growth is greatly delayed.

Treatment of Pastures

Under certain conditions, as with rat-tail infested pastures on the other hand, rough and even brutal treatment may be actually desirable. Heavy stocking, even when wet, accompanied by feeding hay over the area and severe harrowing can work wonders in helping to replace the worthless rat-tail with valuable species such as ryegrass and paspalum.

Where fog is prevalent, and it is apt to become established where the same area is regularly grazed leniently through several successive winters, it can best be combated by close grazing and regular severe harrowing. Treated in this way, it is surprising how the fog will yield place to ryegrass in the following season.

Harrowing

While efficient grazing management can do much to improve the farm pastures, particularly if it is assisted by a judicious use of supplementary feed, the full benefits cannot be obtained if the harrowing is neglected. Now that artificial fertilisers are in such short supply, every endeavour must be made to use the droppings to the best possible advantage. If harrowing is neglected, the unsprayed drop-

pings are largely wasted and may even do positive harm to the sward. Where systematic harrowing is practised the droppings are quickly incorporated into the soil where they do much to build up the invaluable humus element as well as conserve the supplies of nitrogen, phosphate and potash so vitally important for all forms of pasture growth.

Some farmers depend largely on supplementary feed, some employ a winter run-off, while others are content to rely mainly on the animals' humps to see them through the winter. Regardless of the system employed, however, the grazing management remains of vital importance. Apart from the high "time" value of winter grass, it is now that the pasture is apt to be made or marred, and the cumulative effect of good management at this time is eventually shown in healthier stock, better pastures, and higher milk yields throughout the dairying year.

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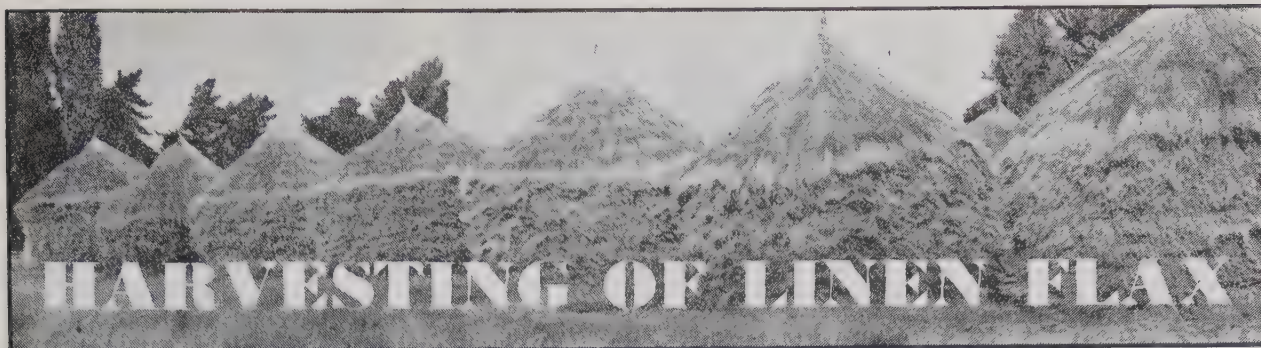
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Stooking and Stacking

LINEN flax has now been grown commercially in New Zealand for three years, and much knowledge has been gained regarding the growing and harvesting of the crop. Factory returns disclose a wide variation in the fibre content and fibre quality of crops grown and harvested under varying conditions. Soil type, climatic conditions and the previous cropping of the areas are three of the major factors affecting quality. It is a fourth factor, the handling of the crop from the time it is pulled until the straw is delivered at the factory, which is extremely important from the point of view of quality and is discussed in this article.

IT is not sufficient for the farmer just to grow good quality flax. That is only half the battle. Any weathering of the straw which takes place has a very detrimental effect on the quality of the final product, and every care possible should be taken by the farmer to ensure that when his straw is delivered to the factory it is bright in colour, and showing as little damage as possible from weathering. Farmers are well aware that seconds running through a line of seed detract from its value, and that it is necessary to re-

in value results. Stained or discoloured straw means a loss in quality, and it cannot be too strongly emphasised that it is not only quantity but quality also which is desired.

Stooking

If the soil is at all damp sheaves left in contact with the ground rapidly absorb moisture, and become blackened and stained. Wherever possible, therefore, an endeavour should be made to stook the crop shortly after it is pulled, taking care when doing

so to stook the sheaves with the knot on the inside of the stook. This will prevent rain entering the sheaf, which otherwise it may do. The principle on which the pulling machine operates combined with the fact that the attachment of a mechanical butter seems impracticable results in the machine tying a sheaf which is very uneven in the butt. Any straightening or butting of the sheaves must therefore be done by hand, either on the pulling machine itself, or immediately the crop has been pulled. During the season just passed a few farmers have



Note peg driven into butt of stack on which the twine is tied. There is a corresponding peg on the opposite side of stack. In this case the stack has been topped off with straw. Had the stack been completed to a peak a more effective job of the thatching would have resulted.

— By —

G. K. McPHERSON,
Instructor in Agriculture,
Ashburton.

move the seconds if a high quality line of seed is to be obtained. The same principle applies to a crop of flax.

If straw is partially stained when it reaches the factory an attempt has to be made to separate the discoloured straw from the bright straw either when it is being gaited or when it is being fed or at the end of the scutcher. In this process a little stained material may be left in the line, thereby reducing the value of the whole line, or alternatively, it may happen that in endeavouring to remove the stained material a great deal of good flax is removed with it. In either case—apart from the extra labour involved—a loss

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Left.—This shows method of laying the thatching material. Note bundle of thatch on left of thatcher. *Right.*—Method of attaching the twine to hold the thatch in position. Just above the eave there remain three spools of twine to be brought into position.



This method of thatching is somewhat similar to that described in figures 2 and 3. The twine is tied to the thatch at intervals and secured in four places to the tie-down wires of the stack.

straightened and butted the sheaves off the pullers before stooking. This practice has much to commend it. It would seem that straightening of the sheaves makes for easier stooking and stacking, and furthermore, the process-

ing of the straw at the factory is facilitated. It should be noted, however, that sheaves which have been straightened are more easily blown about by the wind, and therefore, with crops growing in very exposed areas it is

essential that the sheaves be stooked immediately they are straightened.

Time to Stack

It is suggested that there is a tendency on the part of some farmers to leave the crop too long in the stook before stacking. Provided good weather conditions prevail no ill effects would appear to result from this practice, but in general, the longer a crop is left in the stook, the more it

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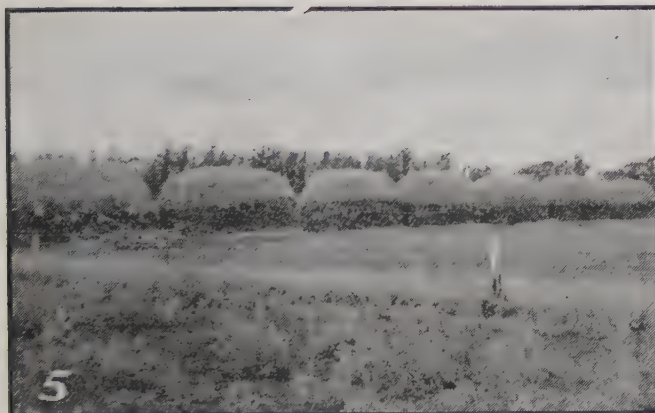
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Left.—A suitable size for square stacks. Where built along fence lines sufficient space should be left between fence and stack to permit easy access by lorry. Right.—Note the snow lying on stacks on left of illustration. Unless covered or thatched much damage is likely to result to straw.

is exposed to the elements, and the more likely therefore is the straw to become discoloured. Naturally, the period a crop remains in the stook will depend on the stage of maturity of the crop when pulled, and on the weather conditions after the crop is pulled. Provided the straw is dry and the seed in the bolls inside the stook is brown in colour, the crop should be fit to stack.

Recently a good line of straw was delivered at the local factory. This crop could not be considered over-mature when pulled, yet stacking of it commenced four days after pulling. During these four days a strong north-west wind blew continuously, and probably the amount of drying it was subjected to was equivalent to at least ten days of normal drying weather. It is not suggested that all crops could be stacked so quickly; if stacked out of condition linen flax straw may heat, in which case the fibre will be valueless. Straw should not be exposed to unnecessary weathering if it can possibly be avoided.

Site for Stack

The selection of a site for stacks requires thought and consideration. Several important factors have to be considered and these will vary depending on the locality. In deciding where to build farmers will be guided largely by their knowledge of local conditions. The tendency will be in those localities where strong winds are prevalent to utilise any available shelter so that stacks are safe from wind damage, and stacking of the crop may proceed under conditions where it might be practically impossible to stack in the open. Close to shelter, however, snow does not thaw out readily, and in those localities where wind and snow are problems to contend with, the farmer should endeavour to select a site for his stacks which will give him reasonable protection from the wind, and at the same time sufficient distance from the shelter that

snow will not lie for undue length of time on the stacks.

Farmers must also bear in mind the question of accessibility. Clause 12 of the Linen Flax Agreement includes the following statement: "The grower will stack all undeseeded linen flax straw on his farm in a place at all times accessible by transport motor lorry from a hard road." In view of the fact that straw has to be carted under all types of weather conditions it is essential that the provisions of this clause be complied with wherever possible. With other factors involved

such as wind, snow, flooding, to mention a few, it may not be wise in some cases to consider the question of access only. A little thought on the part of the farmer, however, may considerably simplify the work of cartage.

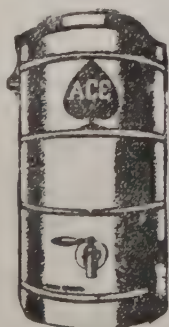
Type of Stack

A good deal of controversy exists as to whether a round or square stack is the more suitable one to build. The problem cannot be answered one way or the other. What type of stack a farmer builds depends mainly on the



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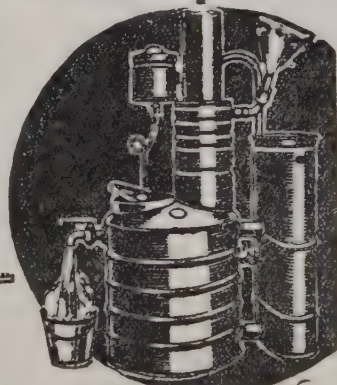


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These stacks are being built in a position well sheltered from prevailing north-west winds. The steep roof on the stacks tends to prevent snow lying on them for any length of time.

facilities available for covering the stacks. Given two stacks of equal tonnage both equally well built, and neither of them covered, experience suggests that there is more weathered material in the square stack. It is not easy to sheet a round stack, and if it is the farmer's intention to cover his stacks then a square stack with an inverted saucer-shaped top is probably the best type to build. On the other hand if it is the intention to thatch

and the question of building a stack which will facilitate loading is therefore a matter which is deserving of consideration by the farmer. For the purpose of loading, round stacks of 10 to 14 tons capacity have proved most suitable. The stacks which are not very convenient to load from are square ones which are either too long, too wide, or are built with too much top on them. If the stack is too long it may have to be loaded on to the

the stack, the round one may be considered preferable. It may be of interest to record that in the Methven district this season, out of a total of 354 stacks built on farms, 310 were round stacks and only 44 were square ones.

With some types of stacks, because of their dimensions, additional labour is involved in loading the sheaves from the stacks on to a trailer or lorry,

trailers in sections, and this necessitates a good deal of extra work in pulling the sheaves apart. With a very wide stack extra work is also involved.

There is also the question of covering the stacks at night when the cartage has not been completed on the same day as the stack was opened up. A relatively small stack is much easier to cover than one containing 30 to 40 tons of straw or more. For all-round purposes a square stack should not be more than 15 feet wide at the base, not more than 40 feet long and approximately 7 feet to the eave, with a similar distance from the eave to the top when settled. A stack of these dimensions will contain approximately 18 tons of straw.

Building the Stack

If a stack is to withstand weathering throughout the winter and the straw comes out in reasonably good condition, the first essential is that the stack be well built—and this implies keeping the centre of the stack well hearted up so as to obtain plenty of pitch on the sheaves. Experience has shown that flax stacks can be built with the sheaves showing plenty of pitch without any fear of slipping taking place.

It is equally essential, also, that if the maximum amount of unweathered

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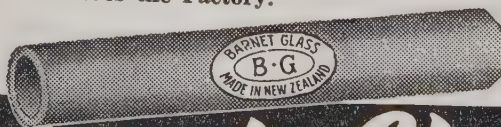


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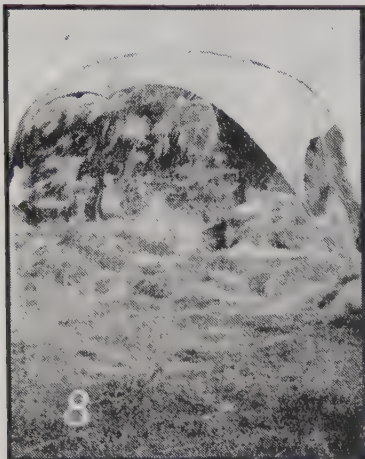
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All stacks should be well fenced off from stock.

straw is to be obtained some method of covering the stacks must be adopted, particularly in those areas subject to snow and heavy rain. This may be accomplished either by the use of covers or by thatching. If a square stack is built, possessing more or less an inverted saucer-shaped top, a canvas cover is generally used, and this is probably the most satisfactory method of protecting the straw from the weather. With a round stack this may either be covered or thatched. If the former method is adopted the usual procedure is to top the stack off with straw so that the cover will lie better on the stack. If it is intended to thatch, however, the building of the stack should be completed with flax.

There are two methods of thatching in the mid-Canterbury district, both of which are illustrated. In figure 1 the stack is first of all completely thatched, and the thatch is then tied down with binder twine as shown. This method of thatching can be carried out only in the absence of strong winds, as for tying down the thatch two men are required. It is, however, a fairly quick and effective method of thatching. The method illustrated in figure 2 can be proceeded with under fairly windy conditions and furthermore the job can be completed by one man.

An endeavour has been made to obtain details from farmers illustrating the cost of thatching. Naturally these vary, depending largely on the price of the thatching material; but the average cost, based on the assumption that two men will thatch two 10-ton stacks in one day, would be as follows:

Labour (two men at £1 per day each) ..	£2 0 0
Binder twine ..	0 7 0
Straw ..	0 13 0
Total ..	£3 0 0
or 3/- per ton.	

In some districts there is probably a lack of suitable thatching material; but in mid-Canterbury plenty of straw can be obtained by binder cutting the wheat straw of a crop which has been harvested with a special type header.

Summary

In the harvesting of the linen flax crop the main features may be summarised as follows:—

1. Stook the crop immediately behind the puller. Where labour is available and conditions permit, some

straightening of the sheaves seems desirable.

2. Stack immediately the crop is ready. Do not expose the straw to unnecessary weathering.

3. For all-round purposes a round stack is preferable to a square one. If building a square stack do not make the dimensions too large.

4. All stacks should be suitably protected from the weather either by covering or by thatching.



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The intention of this article is to assist farmers and others who slaughter and prepare their own meat to understand something of the factors entering into the sanitary preparation and handling of meat for human consumption, in order that they may be able to avoid

SLAUGHTERING ON THE FARM

transgressing some of the elementary principles of hygiene and so procure the best results. It may also help supply officers of the military forces to reach greater efficiency in their work of holding and handling supplies of fresh meat for the army.

AFTER selecting the animal for slaughter give it plenty of time to "cool off." Never slaughter an animal in a heated condition. Fatigue products will be present in the body tissues as a result of energy expended by the beast in trying to avoid being cut off from the rest of the mob. Blood circulation and heart action will also be abnormal, resulting in imperfect bleeding and the danger of rapid deterioration of the meat.

When the animal is well rested, slaughter in the most efficient and humane manner, taking care to sever the main arteries, and also the spinal cord so as to bring about quick bleeding and early unconsciousness.

Slaughter Site

Careful selection of the site for the slaughter must also be considered in order to avoid contamination of the carcass. Regulations under the Meat Act make very stringent provision for the sanitation of slaughtering places, and rightly so, because contamination is the most fruitful source of meat spoilage. Select a clean site for slaughter, avoiding dust and dirt, also use clean implements and wipers, and do not touch the carcass with hands that have been soiled by handling skins or other dirty parts and pieces. Have a bucket of clean water handy and keep the hands clean. A good slaughterman takes a pride in being able to turn out a clean carcass no matter how dirty may be the condition of the animal at the time of slaughter. No amount of washing or wiping of the carcass can ever compensate for soiling and contamination during slaughtering and dressing.

Offal Disposal

The disposal of offal is always a problem on a farm. Make provision for it immediately, taking special care that you do not commit the unpardonable crime of allowing dogs to have access to it. The hydatid disease is a menace in this country, very few cattle and sheep being free of it. Hydatid cysts are almost always pre-

R. E. BIBBY,
Supervising Meat Inspector,
Christchurch.

sent in the liver and lungs of these animals and if eaten by dogs will produce tape worms.

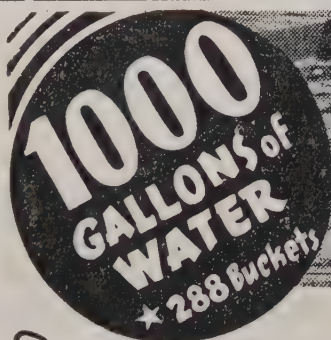
A great deal of publicity has been given to the great danger of human beings becoming infected from dogs harbouring these parasites, and all persons slaughtering meat must take every possible precaution to prevent dogs having access to the offal of slaughtered stock. Failure to do so is classed as an offence under the Meat

Act and renders the offender liable to a fine of £20.

The dressed carcass should be hung in a situation where it will dry and cool out as quickly as possible. In order to understand the reason for this it is necessary to know something of the factors entering into meat spoilage.

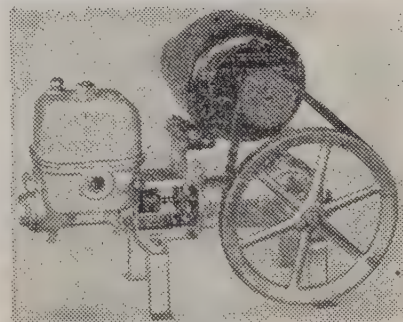
Meat Deterioration

There are two ways in which the deterioration of meat may take place. The first is by means of outside agents, bacteria, moulds, and yeasts. The second comes from within and is a chemical process known as autolysis or self digestion. If it were possible to control the conditions under which



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meat is produced and kept, and set up an ideal environment which would prevent either of these causes from operating meat could be kept in good order almost indefinitely. Such ideal conditions are a low temperature (freezing point or lower), the entire absence of oxygen, and the entire absence of moisture. Unfortunately it is not possible to supply these ideal

conditions on the farm even supposing it were desirable, but to a large extent the spoiling process can be controlled by close attention to certain basic principles.

The need to avoid contamination has been stated already. All contamination by dust and dirt results in the introduction of harmful bacteria and these bacteria need two conditions in

which to thrive and multiply; they are warmth and moisture.

Meat, i.e., red or lean meat, contains from 70-73 per cent. moisture, and so one of the elements for bacterial growth is always present in the deeper tissues, but bacteria can be prevented from penetrating into the deeper tissues if their growth on the surface is prevented. It is only after they have found a suitable environment on the surface and have grown and multiplied that the colonies begin their penetration into the deeper tissues. When meat is kept dry the bacteria have a poor chance of development.

If a piece of raw meat is placed on a plate the moisture will gravitate to the lowest point, i.e., where the cut surface is in contact with the plate, and if the meat is left for a few hours and then lifted the under surface will be quite wet and sour smelling. This illustrates the rapid growth of bacteria under ideal conditions, and points to the need for keeping meat hanging and keeping it dry.

Cooling Process

Warmth is the second requirement of bacteria for their successful growth. The need for cooling out the carcass as quickly as possible has already been mentioned.

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room at a moderate temperature in order to allow the meat to cool out slowly. It was thought then that animal heat was in some respect different from heat introduced from outside sources, and that it would be detrimental to the meat to attempt to freeze it too soon after slaughter. This theory has now been completely exploded, and it is now recognised that the sooner the meat can be railed to the freezing chambers the better keeping qualities it possesses. Therefore, aim to make the best use of whatever facilities are available to cool out the carcass as quickly as possible.

If there is a leafy tree in the back yard build or hang a meat safe in it. Provide plenty of ventilation in the safe itself and the shade of the tree will encourage a cool air which will both cool and dry the meat.

Self Digestion

Regarding the second cause of meat spoilage, autolysis or self digestion, this is a chemical process brought about by certain digestive enzymes which are always present in the blood. These enzymes or fermenting agents are picked up by the blood stream in the course of its circulation through the digestive system, and carried to every part of the animal body. Even when perfect bleeding has been accomplished they are still present because in the living animal they find their way through the walls of the small blood vessels into the cell spaces of the tissues. After death they perform a valuable function in the ripening or maturing of meat as they assist in the breaking down of the tough fibrous tissues, rendering tough meat more palatable and more digestible. This is the reason why tough meat becomes more tender if it is hung for a few days—it is really partly digested. This partial digestion is all to the good up to a point, but beyond that point rapid deterioration takes place and the meat is soon unfit for human consumption.

These enzymes can be neutralised by the introduction of a brine solution, and this is exactly what is done in the curing of hams and bacon. Salt is also a mild antiseptic and so serves a dual purpose by preventing the growth of bacteria; but this article is concerned with only fresh meat—the measure of control necessary against the chemical action of autolysis is considered.

Just as the growth of bacteria moulds and yeasts takes place in the presence of warmth and moisture so chemical processes are assisted by the same agents. Heat is often used in order to hasten a chemical experiment, and distilled water may be added to the experiment in order to provide a suitable environment for a chemical change to take place. This chemical change of autolysis or self digestion is

therefore hastened by conditions practically identical with the conditions most suitable for bacterial growth, which means that identical precautions must be taken to prevent spoilage in both cases.

“Keep it dry and keep it cold” is the golden rule for preserving meat from premature spoilage.

Summary

The main points to be observed are:—

1. Give the beast plenty of time to cool off before slaughter.
2. Select a clean site for the slaughtering operation.
3. Slaughter as efficiently and humanely as possible.

4. Avoid contamination by using clean implements and clean hands.

5. Make provision for the immediate disposal of offal, especially preventing dogs from eating it.

6. Do not wet the carcass but as quickly as possible hang in a cool, dry situation.

7. Never allow meat to lie on a plate or other surface, always hang so as to expose to a current of cool, dry air.

8. Take precautions against flies, especially blow flies.

Provided the measures outlined in this article have been adopted and all necessary precautions taken, there is no reason for personal recriminations if meat does not keep as long as expected.

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Value in Northern King Country

IN the autumn the farmer's mind naturally turns to the question of seeding, either of fields under cultivation, or renovating the grasslands of the hill country. On the good and easily topdressed land, fields which have previously been in crop can be seeded with a more or less standard mixture consisting of certified perennial ryegrass, certified cocksfoot, certified white clover with various other species added, such as crested dogtail, timothy, red clover, according to soil type, climatic conditions and type of farming. When it comes to renova-

phates and lime, which will stimulate the legumes, i.e., lotus major, white and suckling clover. Improvement of this type of pasture is slow and generally little benefit from topdressing is apparent until two or even three dressings of fertiliser have been applied.

The second type of pasture lends itself to much more rapid and marked improvement by surface cultivation, topdressing and re-seeding. In general, the soils carrying this second type of pasture are not fertile enough to sustain a strong white clover sward without annual or at least bi-annual topdressing; but yet, it is above the danthonia-lotus major standard of fertility. It is on this class of land that subterranean clover can be sown with advantage.

— By —

K. M. MONTGOMERY,
Fields Instructor, Te Kuiti.

tion of the hilly grasslands, a great number of factors have to be taken into consideration when choosing the seed mixture, e.g. type of soil, general topography of the land, existing pasture, practicability of topdressing, and pasture control.

Two Main Groups

The existing hill country pastures can be divided into two main groups: (1) the dominant danthonia, browntop, lotus major, suckling clover type which is found on the low fertility soils—these pastures will have a little ryegrass, cocksfoot, poa pratensis, Yorkshire fog and white clover; and (2) the ryegrass, cocksfoot, crested dogtail, Yorkshire fog, browntop, danthonia white and suckling clover type which is found on the better soil fertility lands.

The first type may be improved by topdressing with phosphates, or phos-

Of recent years farmers have been including subterranean clover in the seed mixture when sowing down a cultivated field; but very few have mixed it with the fertiliser when topdressing. Very disappointing results have followed the sowing of this clover on a close sward of poor grasses, e.g. Yorkshire fog or poa pratensis without some pre-cultivation, and in general the practice cannot be recommended. When it is intended to introduce subterranean clover with the topdressing, some light pre-cultivation with the tripod or other penetrating harrow is highly desirable. On steep hillsides, the stocking with heavy cattle to break the surface will also give some loose soil into which the seed will become buried.

Trials

Four years ago the Department of Agriculture laid down a number of subterranean clover strain trials, both on harrowed grasslands and cultivated fields. All the trials were autumn sown because it is rarely, if ever, that a satis-

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factory cover of subterranean clover follows a spring sowing. This clover is an annual, ripening and burying the seed-head in the summer ready to germinate with the autumn rains. If it is sown in the spring, it has not time to develop, flower and set the seed before it dies off with the dry or hot weather. The result is a very poor re-establishment the following winter and spring. Sown in the autumn, the plant develops during the winter, and in the spring, if the field is given a proper spell from grazing at the time when the runners are developing, a prolific re-seeding of the areas is assured. Lamont (1) lays particular stress on the need for the field to be spelled, especially in the first spring, and his observations have proven equally applicable in the King Country.

In the trials on cultivated fields the inclusion of certified white clover with the subterranean clover has given a better ground cover than has subterranean clover alone, and in no instance has the latter become so strong as to completely dominate the white clover. During the summer and autumn months the "white-subterranean clover" plots have always been noticeable for the strong grass growth compared with those sown with only subterranean clover with the grasses. One of the weaknesses of subterranean clover is that it fails to produce much nitrogen during the autumn months at a time when the grass—especially ryegrass—is making growth after the dormant period of the summer, and the inclusion of white clover to supply nitrogen during this period is therefore warranted.

Strains Sown

Four strains of this clover were sown in the trials: Mount Barker, Tallarook, Dwalganup and Burnerang. Of these Burnerang and Dwalganup have proved to be of little or no value, and their use is not advocated for King Country conditions. Mount Barker is earlier into production than Tallarook, and on account of its large leaf and

more upright growth appears to be ideally suited for pastures which are generally lightly grazed, i.e., cattle grazing. Tallarook is slightly later coming in and going out of production, and on account of its close crown and dwarf-like habit appears to be better suited to close grazing, i.e., sheep grazing. Although no plots have been sown in the experimental areas with a mixture of Mount Barker and Tallarook, it would appear from the habit of these two species to be a wise policy to sow both when introducing subterranean clover into a pasture.

In the King Country, which is essentially a graziers' district, subterranean clover is undoubtedly playing an important part in the production of fodder in the winter and spring, and its value is becoming more appreciated each year, especially by the fat lamb raiser. There is no apparent reason why its introduction into much of our hill country grasslands should not prove of equal benefit to the flock raiser as to the fat lamb raiser on the better lands of the district.

1. Lamont: Journal of Agriculture, April, 1941.



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Sheep Dipping

Practical points in sheep dipping, including the design and construction of sheep dipping baths, is the subject of the Department of Agriculture's Bulletin 181. Mr. J. E. Duncan, Wool Instructor, has in this bulletin endeavoured to cover concisely all the aspects of dipping. It is designed to fill a definite want, as most of this information has formerly been scattered or available from commercial firms only.

This bulletin is free and copies may be obtained from the Department of Agriculture, Wellington.

Many New Zealand farmers will have developed a personal interest in New Caledonia now that their sons are serving with the New Zealand forces stationed on this Pacific island, and will be glad to learn something about the island and the type

Farming in New Caledonia

of farming carried on there. In this article Sgt. E. M. Ojala, formerly Instructor in Agriculture, Gisborne, gives his impressions of New Caledonia and describes farming conditions on the island.

MY first reaction on sighting this French possession from our approaching ship was one of disappointment. Filled with travelogue visions of what a South Seas island ought to be like, I expected to gaze in wonder at coral strands, blue lagoons, and palm-fringed shores, and lovely, dusky, hula-dancing maidens! Instead, all I could see, far beyond the white ribbon of waves breaking on the coral reef, was a vista of steep, arid hillsides clothed in native tussocks or short scrub. Not a banana or a pineapple to be seen! Not a single dusky maiden! My disillusionment was complete.

In the days and weeks since then I have been fortunate enough to see much of the island, and as a result it has recovered for me something of the glamour and romance traditionally associated with the South Seas. In many of the fertile valleys are to be found cool, shady coffee plantations, banana groves, coconut palms and pawpaws. Mango trees abound, pineapples are grown, and occasionally I have discovered wild passionfruit vines and oranges. I have drunk the coffee and tasted the fruits, and found them all delicious. True, I have seen no blue lagoons, but many a broad, placid stream lined with stately coconut

palms and tall, nodding bamboos, and with curious native huts on the banks. Sometimes one finds a native village, a neat cluster of white mud huts with thatched roofs, and English flowers growing, and alert, dark-skinned children crowding around.

Official Language

The French people provide much interest also. French of course is the official language, and there is hardly a New Zealander who has not tried out his knowledge or ignorance of it, often with amusing results. The French cooking is excellent and the hospitality of the people is generous.



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On one occasion I was invited to dine with a venerable old French couple who understood no English. Courses and conversation progressed steadily for an hour and a half, by which time my hunger was well satisfied, and my French well-nigh exhausted!

The main island of New Caledonia is approximately 250 miles long and 35 to 50 miles broad. It is very mountainous, consisting mainly of huge, characteristic rock masses called "massifs" by the French. These are steep, many-peaked ridges almost sheer for 3,000 feet, with bare rock faces or a covering of light bush. Some of them are ten miles long. In addition there are many other peaks and mountains up to 5,000 feet high. The final result

is a minimum of flat land adjacent to the river mouths, and a maximum of hill and valley, somewhat reminiscent of the central King Country of the North Island. Cultivation—what little there is—is necessarily restricted to the river flats, apart from the natives' garden patches of pineapples, yams, taro and tapioca.

Main Industries

Mining is undoubtedly the main industry of New Caledonia. In pre-war days the export of nickel and chrome produced 85 per cent. of the total value of all exports from the island. Many other minerals are found here also.

Next in importance is the coffee industry. Coffee exports amounted

before the war to 2,000 tons per year, most of this going to France. The coffee tree is a bushy plant, the growth of which is controlled by cutting at a height of 4 to 6 feet. Protection from the hot sun is given by planting in the shade of tall, leafy trees. The first coffee beans are ready for picking in May-June of each year, and picking may continue steadily until November or December.

Cattle Raising

The only other industry of any importance is cattle-raising. The figure given as the present cattle population of the island is 110,000 head. In addition there are many thousands of cattle roaming wild in the mountains and valleys of the bush-clad interior. By law, the wild cattle belong to the person on whose property they are found. In seasons when the prices for meat and hides are good, there is much exciting and arduous work to be had on the big ranches of the interior, where the wild animals are mustered in valleys and later drafted to the lower coastal country.

It was to learn something of the cattle business of New Caledonia that I made a dusty trip to the township of Kone one scorching day, to interview M. Leo Hagen. For six years M. Hagen has been farming 2,000 acres of good grazing land in the southern foothills of a huge massif near Kone, on the western side of the island.

Dairy Production

While I sat panting in the shade of his wide verandah and sipped coffee, M. Hagen told me that he runs 90 dairy cows, mainly of the Jersey breed, including some animals of New Zealand stock. He does not milk more than 36 at any time. His method is to have a few cows freshening every month. These he milks for four or five months, or until their yield of milk falls off, after which they leave the dairy shed for the grazing paddock, until their next calving. With a small separator the cream is separated; then ripened for two days in open bowls and churned into butter, which is sold in Noumea, the only large centre of population in the island. Churning is not an easy process in this climate, but M. Hagen has a cool, clean, concrete dairy under a corner of his house; and only occasionally has difficulty in making his butter.

Production reaches a peak in the month of March in a normal season, when the rainy period extends from January to March. At this time the herd averages 7-8 quarts per cow per day, or nearly two gallons, and M. Hagen has a daily make of 25 lb. of butter. Compared with New Zealand standards this production is not high, and M. Hagen believes he could raise it considerably by better feeding if he wished. His output of butter is limited by the capacity of his churn,

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and a greater total yield of butterfat would be an embarrassment at present. He is planning to enlarge the capacity of his plant.

Pastures

The paddocks on M. Hagen's farm are large—up to 100 acres in size—and the pasture is fairly open and deficient in legumes. The sward consists largely of spear grass, a tufty native grass which has a role over here similar to that of danthonia in the North Island. Paspalum species contribute well to production—also buffalo grass. There is a little perennial ryegrass and some subterranean clover present, a number of Panicum species of the summer grass type, and a few other rough grasses with which I am not familiar. After prolonged dry weather, when the pasture browns off, the stock eat the leaves of wild shrubs such as the prickly lantana, the guava and a tender-leaved acacia.

The only cultivation that M. Hagen undertakes is the growing of a patch of elephant grass, guinea grass and sorghum. This crop is cut and chaffed and fed green to the milking cows twice a day all the year round. Copra meal is sprinkled over the green stuff at the rate of nearly one pound per day per cow. No other supplementary feeds are provided.

Other Farm Stock

M. Hagen has about 20 sows which run wild and produce enough pigs to consume the skim-milk. There are also a few hens and ducks which keep the household well supplied with eggs.

Two bulls are run with the dairy cows, one Jersey and one Illawarra, an Australian beef breed. M. Hagen saves about 40 heifer calves, from which he later selects about 25 yearlings with which to build up his herd. The bull calves are generally reared, too, and sent as steers to join the grazing cattle. This is one reason why the Illawarra beef strain is introduced.

In addition to the dairy side of the business, M. Hagen runs a herd of 160 beef cows produced from Red Poll and Shorthorn stock. These do not require much attention, as the paddocks are large, the water supply is good, and disease incidence is very low. Surplus stock are sold on the farm by private arrangement.

Labour

The labour supply on the farm consists of four Javanese "boys." One

of them cuts the green feed each day, two of them do the milking, and one assists M. Hagen with the butter-making. For this they are housed, fed and clothed, and paid a cash wage of 150 francs each per month, or about one pound in New Zealand money.

Land Values

I asked M. Hagen for an indication of the market value of land such as he was farming. He replied that the freehold of farms such as his had been bought recently for 300 francs per acre, which is about £2 in New Zealand currency. The mountainous cattle stations of the interior are held on leasehold from the Government for an annual rental of about 2d. per acre. But such land is largely covered with bush or scrub, and it takes four or five acres of it to support a cattle beast all the year.

Limited Market

Apart from local dealings, there seem to be only two outlets for the surplus cattle of the island. One is the abattoirs at Noumea, and the other is a meat-canning works at Ouaco, near the northern end of the island on the west coast. Thus marketing involves driving the cattle for long distances in many cases. The canning works usually open in May, and close down in November as the weather is too hot to drive cattle in the summer months. M. Hagen quoted the current price for beef as 6 francs per kilogram, which is equivalent to 15/- per 100 lb. in New Zealand.

M. Hagen considered that cattle of the French Limousin breed were the most successful under New Caledonian conditions. The Devon, Red Poll and Hereford were also very good. The Shorthorn did well, but became too big and heavy for driving in the hot climate. The Polled Angus was not a success on the island.

The general impression I have gathered from my rather limited acquaintance with the position here is that farming in New Caledonia is relatively unorganised and undeveloped. The main reason, of course, is not far to seek. It lies in the fact that in normal times the only market catered for is the small local one, the limited demands of which can be met without much organisation or development.

Pigs

THE basis of success in pig production is management. The object of the Department's free bulletin, "Modern Methods of Pig Production," is to provide some of the essential information necessary to successful management. If you have not a copy of this bulletin send for one today.

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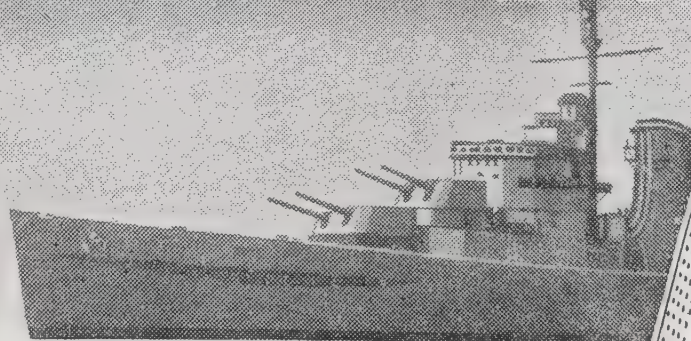
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Veterinary Notes for the Farmer

Accessory Food Factors and Their

Relation to the Health of Pigs

THE pig, or any other animal for that matter, can be fed an abundance of food, carbohydrate, protein, and fat, but it will not thrive and grow in health unless it also receives certain other substances called accessory food factors.

These accessory factors, which are the vitamin and mineral groups, are required in only very small quantities, but their presence is absolutely essential. They have been likened to the oil which keeps the machine running freely and allows it to function at its full efficiency.

The vitamins are food substances which occur in minute quantities in certain foodstuffs, and which are essential for normal growth and for maintenance of health. The following is a brief account of the most commonly recognised vitamins.

Vitamin A

This vitamin is a fat soluble substance and is found in abundance in the fat in the liver of all animals and fish. Cod liver oil and halibut liver oil are well known sources of this vitamin. However, vitamin A is also present in the form of carotene in all green fodder plants, in yellow roots, and in carrots. Yellow mangels contain carotene but red mangels are deficient. It is chiefly from these vegetable sources that pigs obtain their very necessary supply of vitamin A.

The chief results of a deficiency are a marked decrease in the resistance of the animal to infection, a cessation of growth, and, in some cases, a rather typical condition in which there is a swelling of the eyelids, inflammation of the surface of the eyes, and finally blindness. Of these, the lowering of resistance to disease is the most disastrous. Pigs so affected may succumb to any slight infection which the animal on a complete diet would readily overcome.

From this the danger of intensive feeding on concentrates is obvious, and no matter what the ration, an ample supply of green feed must be given.

In order that healthy litters may be obtained it is a good plan to give the sows one ounce of cod liver oil per day for a fortnight before farrowing and for a time following, depending on the health of the young pigs. The oil may be mixed with the sow's ration.

Vitamin B Complex

This vitamin is called B complex because it is not one, but several vitamins, all having different functions in the maintenance of health. Its richest sources are liver, green stuffs, milk, and the outer covering and germ of cereals. Yeast is a particularly rich source of all the B vitamins. One of the important characteristics of vitamin B is that it is readily broken down by moist heat, especially in alkaline solution. In this fact lies the danger of destroying the vitamin when pigs are fed the bulk of their ration in the cooked state. In the dairying districts where milk and milk products are fed the danger of deficiency is not great, but where pigs are raised on a ration of cooked roots, meat meal, and little grain there is a definite danger unless abundant grazing is supplied; and it must be stressed that half an acre of bare ground with an occasional wallow is not sufficient grazing. In the absence of grazing, good quality chaffed hay, especially lucerne hay, will make up the deficiency. This does not do away with the

necessity of feeding at least a quarter of the root ration in the raw state. In general, animals fed sufficient whole cereal grain (untreated) and green stuff, will receive adequate amounts of this factor.

Loss of appetite is the primary symptom of deficiency of vitamin B complex. The chronic symptoms manifested are slow growth rate, often loss of weight, dirty coat, diarrhoea, anaemia, and in some instances vomiting and staggering gait. Deaths following intense anaemia and diarrhoea are likely to be common among unweaned pigs.

Vitamin C

This vitamin was one of the first recognised accessory food factors and in its absence scurvy results. The vitamin is present in all fruits and green stuffs. Potatoes are rich in it and milk is deficient. The vitamin is very unstable, so unstable in fact that even at normal temperatures during storage of foodstuffs a reduction in vitamin content takes place, and when subjected to heat the vitamin is rapidly destroyed, and consequently in potatoes it is destroyed on boiling. The danger of a deficiency sufficient to bring about scurvy is very slight, but a greater intake of vitamin C is required to maintain health than to prevent signs of disease, which fact means that, although animals may show no definite signs of deficiency, they are not growing quite so fast nor fattening quite so well as an animal on a complete ration. During pregnancy the requirement of Vitamin C is increased, and this can be made up by supplying abundant green feed.



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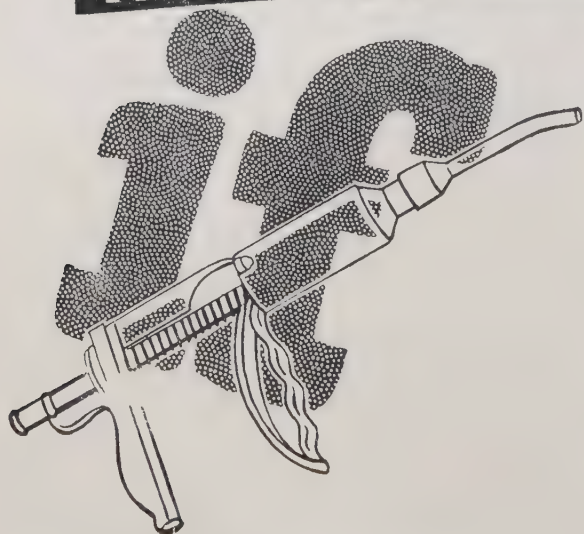
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Vitamin D

This vitamin is fat soluble and is found in fish oils (cod liver oil), whole milk, and to a less extent in fodder plants. Animals obtain their main supply by the effect of the sun's rays on a substance called ergosterol found in the skin. This complex chemical substance—ergosterol—is converted by exposure to sunlight into calciferol which is identical in its effect on animal health to vitamin D. Consequently pigs may be receiving a diet containing little or no vitamin D, but so long as they are kept in good sunny surroundings they will be able to manufacture their own supply of vitamin D. This point cannot be stressed too forcibly, for vitamin D is no exception to the rule—it must be present before the animal will thrive in robust health.

It is so often the experience to find that a farmer in selecting a site for a piggery will choose an area of waste land in a plantation or some similar place which is cold, draughty, and shady, and devoid of grazing. Mature pigs may be able to put up with these

conditions, but for young pigs nothing but the best conditions are satisfactory. Farrowing houses must be warm and sunny.

Vitamin D is called the antirachitic vitamin, that is, its absence causes rickets in young animals, and osteomalacia in adults. Rickets is a condition in which the bones remain soft due to an inability of the animal to lay down calcium (lime) salts in the bone substance. Before rickets will appear there must be either a deficiency of calcium (lime) and/or phosphorus, or a lack of balance of these substances accompanied by a deficiency of vitamin D. Vitamin D increases the efficiency of the animal body in utilising the mineral salts supplied in the ration.

In cases in which animals are deficient in Vitamin D, the usual symptoms are harshness of coat and general unthriftiness, stiffness, and swelling of joints, unsteady gait, and in some cases partial paralysis.

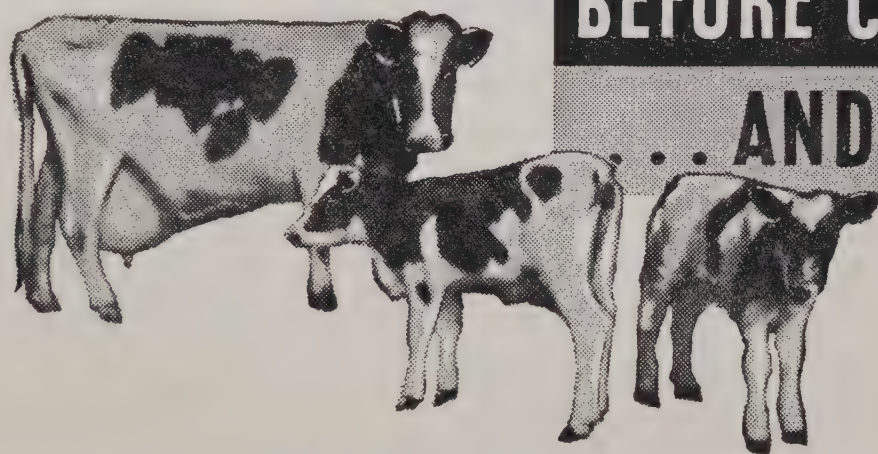
—W. D. ROBINSON, B.V.Sc.,
Veterinarian, Dunedin.

Parasitic Gastritis in Calves

AT the present time the lack of attention given to calves after they are weaned is particularly noticeable. It is a common sight to see young stock with harsh, staring coats, scouring, and in a generally unthrifty condition, due almost entirely to the neglect of the farmer.

Stomach worm is most common on wet, low-lying country, and it is here in particular where a little forethought will be well repaid. It should be part of the farm practice to commence dosing calves as soon as they are weaned, and with regular monthly doses, plus a warm, sheltered paddock and plenty of good, sweet hay, calves can be carried through the winter in splendid condition.

—W. P. L. DALE, Inspector
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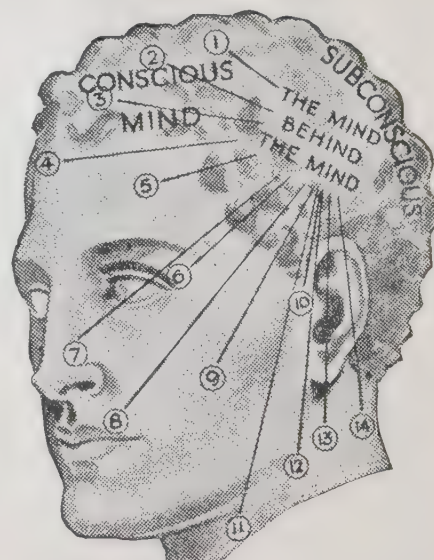
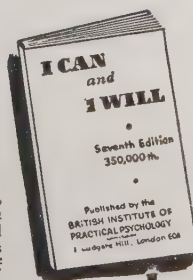
Only the self-conscious and nervous really realise the full effect of their affliction—the doubts and fears, the self-criticism, the friendlessness, the hours of brooding over “what other people think of me,” the regrets for opportunities lost, the bitter pain of seeing lesser men and women pass them in the race of life.

Yet such men and women, directed in the right way, have the power to win heights that dull, phlegmatic natures could never reach. An inferiority complex is a disturbance in sub-consciousness, a source of powerful negative impulses which manifest themselves in various personality-weaknesses such as deprive you of happy, carefree social joys—prevent you from progressing in your chosen business calling—depress you with anxieties, fears, and other groundless worries—render you ill at ease in the presence of superiors or shy and tongue-tied with the opposite sex—weaken your memory—ruin your married harmony—cause mind-wandering, inability to concentrate or to make decisions—weaken your will power—overwhelm you with “stage-fright”—make you sick with nervous apprehension at the prospect of an important interview.

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Imaginary diagram depicting the effect of the subconscious mind on the personality.

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All Correspondence is Confidential.

Farm Practice and Management

New Zealand Grows Medicinal Plants for Britain

IN co-operation with the Department of Agriculture the Hastings Borough Council is growing medicinal plants which are dried in New Zealand and exported to Britain for use as drugs.

These drugs, prior to the second Great War, were available from Europe, but since this supply has been totally cut off it has been necessary for Britain to look elsewhere for her supplies, particularly for the needs of the Army.

A Patriotic committee, set up by the Hastings Borough Council, is growing the plants under contract to the Department of Agriculture, which, together with the Botany Division of the Department of Scientific and Industrial Research, is also supervising the work. All proceeds received by the borough are donated to patriotic purposes.

In all, some 28 acres of land adjacent to Hastings are being utilised. The first operations were commenced in the 1941-42 season, when areas of foxglove (*Digitalis purpurea*), thornapple (*Datura stramonium*), henbane (*Hyoscyamus niger*), nightshade (*Atropa belladonna*) were harvested. This season, 1942-43, the areas of each plant are being increased, and also small areas of opium poppy, castor oil bean and menthol have been added.

The seeds are sown in boxes or nursery beds in the early spring and later planted out in the field at approximately 18 in. spacings. The land is kept well cultivated for control of weed growth, and the plants are ready for harvest about February. It is possible to take two crops of digitalis and belladonna, but in other cases



Interior of the packing shed showing members of the W.W.S.A. sorting leaf. The drying plant can be seen in the background.

the plants are annuals. Last autumn the digitalis and belladonna were harvested, a second cutting taking place in October.

Drying

When the plants have reached the correct stage for harvesting they are cut by the borough workmen and delivered to the drier; here the leaf is weighed (digitalis produces as high as 10 tons green leaf per acre). After

weighing, the leaf is sorted on to trays and loaded into trucks; 80 trays go to a truck and 28 trucks are loaded each day—this work is performed by members of the W.W.S.A., twenty-eight of whom are working each day in two four-hour shifts. The trucks are run into the drier at the end of the day's work, the heat is turned on all night at the required temperature, and at 8 a.m. next day the trucks are removed, trays emptied, dried leaf

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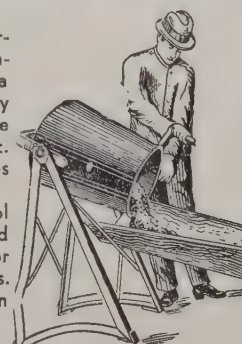
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Left.—Stripping the leaf from the plant. Right.—High school children picking *Datura stramonium* leaf.

pressed into wool-packs or tins, and the work of reloading the trucks is again commenced. Approximately 1½ tons of green leaf go into the drier each night; of this amount only one-seventh comes out as dried leaf, the balance having been removed as moisture. Samples for analysis purposes are drawn from each bale as it is filled.

Harvesting of most of the species of plants grown is a comparatively simple business with the exception of thorn-

apple (*Datura stramonium*), which, as its name suggests, is a somewhat prickly proposition. In order to keep a sufficient supply of leaf to the drier each day, it was necessary to supplement the number of workers, and in this connection, at one period, the pupils of the Hastings District High School were of great assistance.

—R. P. HILL, *Fields Instructor, Hastings.*

Internal Parasites

The annual mortality amongst hoggets from internal parasites is increasing from year to year, and on some properties is assuming enormous proportions. Similarly, losses amongst calves are proportionately high. Important information on this problem is available in the Department's bulletin, "Internal Parasites of Sheep and Calves, and Their Treatment."

PLOUGHSHARES ARE SWORDS

A salute to the farmers of New Zealand . . . the men and women who are growing food for freedom . . . the folk who, despite labour and equipment difficulties, are maintaining and increasing production. No one appreciates better than International Harvester the difficulties of war-time farming in New Zealand, and if we can help you solve those difficulties, well that's what we're here for. Maybe we haven't the machines we used to have—that's not our fault, nor yours. But on thousands of farms throughout New Zealand there are McCormick Deering Tractors and equipment plugging away for victory.

Our job is to help you keep those machines plugging away with all the efficiency and dependability that has made McCormick Deering the most trusted name in mechanical farming. So if you need advice or assistance on any problem, no matter how small . . . if you require service or parts . . . get in touch with your local International Harvester agent, and if your local I.H.C. man has been called up . . . then write us at Head Office, Christchurch, and we will help you if it's humanly possible.



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Turnip and Swede Seeds

IN the April, 1941, issue of the "Journal of Agriculture" appeared a report on the production of turnip and swede seed in New Zealand in order to safeguard supplies of this commodity. In this report appeared a statement of the types of seed being grown under Government approval together with a list of the commonly known varieties represented by each type.

For the information of readers this statement is reproduced below:—

DESCRIPTION OF TYPE.	VARIETIES REPRESENTED BY TYPE.
(1) White Flesh Turnips.	
N.Z. Green Globe	{ Hardy Green Globe. Imperial Green Globe.
N.Z. Red Globe	{ Lincolnshire Red. Red Paragon.
N.Z. Purple Globe	{ Purple Top Mammoth.
(2) Yellow Flesh Turnips.	
N.Z. Green Top Yellow	{ Green Top Yellow Aberdeen. Green Top Scotch. Fosterton Hybrid. Dale's Hybrid.
N.Z. Purple Top Yellow	{ Purple Top Yellow Aberdeen. Purple Top Scotch. Waites Eclipse.
N.Z. Green Resistant	{ Wallace.
N.Z. Purple Resistant	{ Bruce. Wonowon.
(3) Swedes.	
N.Z. Superlative	{ Superlative. Masterpiece. Success.
N.Z. Grandmaster	{ Grandmaster. Majestic. Tipperary.
N.Z. Crimson King	{ Crimson King. Elephant. Monarch.
N.Z. Resistant	{ Wilhelmsburger Otofte. Green Top.
N.Z. Sensation	{ Vilmorin. Sensation.

In practically every case the varieties grouped are so similar as to be indistinguishable in the field from the type by which they are represented. Where some difference does exist the variety is nevertheless so similar to the type being grown locally that no inconvenience will be caused through substitution.

—J. H. CLARIDGE, Seed Certification Officer, Wellington.

Autumn v. Spring Sowing of Pasture

THE consequences of spring sowing of permanent pasture on weed-infested country is clearly demonstrated in the illustration. As most of our soils, following one or two crops, are badly infested with weed seeds, such consequences are the rule rather than the exception where spring sowing of permanent pasture is



attempted. In this case, a strip down the centre was missed when the paddock was sown in the autumn and left until the spring. The autumn sown grasses and clovers were sufficiently well established to suppress weed growth in the early summer, but when competing on equal terms with the spring-sown grass, thistles were able to get away and dominate the slower growing pasture species.

—N. LAMONT, Instructor in Agriculture, Masterton.

Clover Seed Pests in Hawkes Bay

SOME instances of very low yields of clover seed have been reported during the 1942-43 harvest, and on investigation it has been found that two separate pests were partly responsible, often to the extent of making the crop unprofitable to harvest.

While the clovers were in flower, they were attacked by the nymph or immature stage of the thrip (*Haplothrips niger*), a pest which is prevalent on clover in most areas. This thrip feeds upon the flower head, often more or less destroying the flower. Both the insects and their larvae are responsible for the damage, the latter being easily identified in the flower heads as minute immature insects, bright red in colour.

The second cause of the low yields was due to the presence of a caterpillar which ate its way into the seed, eventually leaving only the shell. This insect has been identified as *Coleophora spissicornis*, and has previously

BUSH SICKNESS SUCCESSFULLY OVERCOME

Read this—

Today, bush sickness and the related diseases in other parts of the world are efficiently controlled by supplying extra cobalt, either by administering it direct to the animal in the form of licks or drenches or by applying it to the pasture when topdressing.

Extract: Journal of Agriculture
March 1943 p.136

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USED AS A LICK:

Formula No. 1.—1oz. Cobalt Sulphate
4cwt. Salt.
1cwt. Linseed Meal.

Formula No. 2.—1oz. Cobalt Sulphate.
2½cwt. Salt.
2½cwt. Steamed Boneflour.

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6lb. of the above lick should be eaten in a week by 100 sheep, and 30lb. by 100 cattle. Results are remarkable. Stocks available for prompt delivery.

been observed as a pest of red clover in Denmark.

The combined depredations of these two pests can so lower the yield of clover seed as to make harvesting unprofitable. Farmers in seed-growing areas are advised to closely examine their crops before harvesting to ascertain the extent of any damage, and the probable yield, before finally deciding to harvest the seed crop.

—G. A. BLAKE, *Instructor in Agriculture, Hastings.*

Radio Broadcasts

RADIO talks to farmers will be given from Station 1YA, Auckland, at 7.15 p.m., on the following dates:—

June 7.—“A Few Observations on Root Cropping in the Pumice Country,” by Mr. C. R. Taylor, Fields Instructor, Department of Agriculture, Rotorua.

June 14.—“Some Diseases of Lambs,” by Mr. H. Doyle, Veterinarian, Department of Agriculture, Hamilton.

June 21.—“Recognition of Insect Pests,” by Mr. D. Spiller, B.Sc., Assistant Entomologist, Plant Diseases Station, Auckland.

June 28.—“Young Farmers’ Clubs’ Session.”—To be arranged by Eastern Bay of Plenty District Committee.

Pig Industry Broadcasts

UNDER the auspices of the District Pig Councils concerned broadcasts will be delivered in May as follows:—

1YA, Auckland.—June 17, 7.30 p.m. “Housing and Sanitation,” by the Supervisor, Northland District Pig Council.

4YA, Dunedin.—June 14, 7.15 p.m. “Housing for Pigs,” by M. Roderique, Supervisor, Otago-Southland District Pig Council.

2ZA, Palmerston North.—June 15, 8.30 p.m.—“Breeding Programme,” by J. H. Marsdon, Supervisor, Wellington District Pig Council.

2YH, Napier.—June 10, 7.15 p.m. “Avoiding Losses in Pig Production,” by I. W. Owtram, Supervisor, Tairāwhiti District Pig Council.

Probable changes in the times of Pig Industry Broadcasts may be necessary and due notice will be given from the stations concerned. It is anticipated that during May and June, with the exception of 2ZA, Palmerston North, the time of broadcasts will be between 7 p.m. and 7.30 p.m.

HURRY THEM ALONG

Every Railway Wagon is Needed

This year the railways are carrying even more wagonloads of freight than were carried last year. The demand upon rolling stock is tremendous, but there are still enough wagons to do the job, provided that they DO do the job and are not permitted to waste time in sidings, stores and goods sheds. Ten minutes saved from each hour of standstill time would be equivalent to several hundred extra wagons.

Load Quickly — Unload Quickly — Despatch Quickly

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for months May, 1942, to March, 1943, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	222,946	597,733	386,763	296,044	1,452,935	287,674
Poverty Bay-Hawkes Bay	56,498	57,339	616,209	412,408	1,538,731	23,191
Taranaki-Manawatu ..	94,867	212,770	345,833	260,931	1,409,168	137,510
Wairarapa-Wellington ..	41,452	25,359	309,877	210,591	1,046,455	29,130
Totals	415,763	893,201	1,658,682	1,179,974	5,447,289	477,505
Abattoirs	116,929	35,336	551,652	240,351	105,774	124,245
North Island Totals ..	532,692	928,537	2,210,334	1,420,325	5,553,063	601,750

South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,668	10,723	21,186	12,079	171,301	8,803
Canterbury-Westland ..	12,518	38,492	308,536	255,903	1,926,754	28,999
Otago-Southland	11,673	37,961	223,684	193,685	2,144,294	6,239
Totals	25,859	87,176	553,406	461,667	4,242,349	44,041
Abattoirs	77,851	19,016	369,684	192,754	71,069	40,918
South Island Totals ..	103,710	106,192	923,090	654,421	4,313,418	84,959

Dominion.						
Meat-expt. Slaughterhouses						
Abattoirs	441,622	980,377	2,212,088	1,641,641	9,689,638	521,546
	194,780	54,352	921,336	433,105	176,843	165,163
Grand Totals	636,402	1,034,729	3,133,424	2,074,746	9,866,481	686,709
Same Period, 1941-42—						
Meat-export Slaughter-						
houses and Abattoirs ..	491,819	1,016,731	3,576,988	2,341,225	10,034,298	814,467
Same Period, 1940-41—						
Meat-export Slaughter-						
houses and Abattoirs ..	554,765	1,048,274	3,406,606	2,300,711	10,217,291	974,984

Slaughterings of Pigs

The 116,046 pigs slaughtered at meat-works and abattoirs during the month of March, 1943, were distributed in weight ranges approximately as follows:—

Up to 60 lb.	1,418
61 to 120 lb.	54,586
121 to 160 lb.	49,429
161 to 180 lb.	4,584
Over 180 lb.	2,856
Sundries	3,187
	116,046

The grading of porkers was 94 per cent. of first quality, 6 per cent. of second quality, and that of baconers was 81 per cent. of prime 1's, 15 per cent. of prime 2's, and 4 per cent. of second quality.

In the different weight ranges of baconers: the grading was as follows:—

121-160	82%, 14%, 4% of P1's, P2's and 2nds respectively.
161-180	69%, 24%, 7% of P1's, P2's and 2nds respectively.

In the Orchard and Vineyard

Orchard Notes

Orchard Management—Pruning

THE purpose of growing fruit trees in a commercial orchard is to secure by intelligent management satisfactory annual production of good quality fruit. The achievement of this is not always easy and is dependent upon such factors as environment, cultivation, manuring, disease control, pruning, etc. To the intending orchardist the question of suitable environment is the first consideration. Climatic and soil conditions, and also proximity to markets are important factors in the economy of orcharding. A mistake made in the location of the orchard may prove the stumbling block to success. Intending orchardists, whether planting new orchards or purchasing existing ones, should consider very carefully the location of their prospective orchards. If in doubt, advice should be sought from the Orchard Instructor of the Department of Agriculture in the district in which it is proposed to become established.

When once established the orchardist is concerned with the problems of orchard management. Successful cropping is only achieved by attention to all phases of cultivation, manuring, disease control and pruning; each is a vital link in the chain of success. Cultivation, manuring and disease control having been dealt with in previous notes, a few points are now given on the broad aspect of pruning.

Pruning

Pruning is undertaken for the purpose of keeping the fruit tree in a healthy condition and able to produce satisfactory annual crops of good quality fruit. Pruning falls into two categories—pruning of the young tree and pruning of the mature tree. While the tree is young, pruning should be aimed at the production of a sturdy tree with strong, well-balanced limbs spaced so as to carry the fruit in a position where it may secure the benefits of adequate air and sunshine, and where it may be readily sprayed and harvested. Avoid producing too many leaders; the greater the number of leaders the weaker each will be, and the greater the liability of each to bend under the weight of the fruit. Five to seven sturdy, well placed leaders are sufficient under most circumstances.

When the tree has reached maturity and is bearing, attention is turned to the maintenance of the fruiting wood

in a healthy vigorous condition. Fruiting wood of the apple, pear and plum may be divided into three classes:—

1. The future fruiting wood—the one-year wood shoot.
2. The present fruit wood—healthy well budded wood.
3. The spent fruiting wood—exhausted and poorly budded wood.

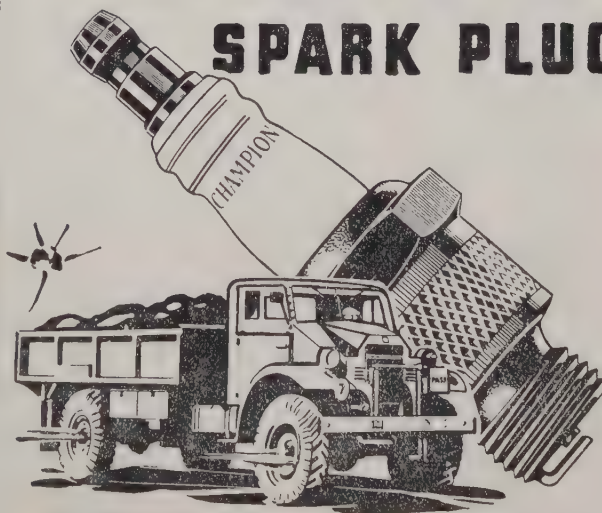
As spurs and shoots become aged they become poor conductors of the food supply. Old and exhausted fruiting wood usually carries small, low quality fruit which is readily rusted. Furthermore, on this old wood the leaves tend to fall early, and also during drought conditions due to restricted water supply.

Refurnishing

The buds on the younger wood are usually better nourished and better formed and have greater chances of blooming and setting satisfactorily. Better quality and larger sized fruit is carried on this young, healthy fruiting wood. It would therefore appear a wise procedure to keep the tree furnished with young, well-conditioned wood. This is secured by the method known as refurnishing, which provides for—

- (a) Cutting away the old and exhausted wood.
- (b) Shortening the present fruiting wood where necessary to—(1) preserve vitality, (2) prevent overcrowding.
- (c) Thinning out the surplus future fruiting wood and leaving the balance unshortened for the first year to promote bud development.

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The severity of the pruning depends upon the condition of the tree. Where trees have stagnated due to lack of attention a far heavier pruning will be necessary than where they are still making adequate growth. The skill of the pruner must be aimed at:

1. Maintaining the "balance" of the tree;
2. Promoting sufficient new growth to eventually replace the exhausted fruiting wood.

If kept in too

vigorous a condition fruiting suffers and the tree becomes a dense mass of growth which retards the colouring of the fruit, and also promotes conditions suited to development of disease. On the other hand, if the tree is allowed to stagnate, the fruiting wood becomes exhausted and replacement is difficult because of lack of new growth.

The pruning of stone fruits may be started as soon as the leaves commence to drop toward the end of May,

followed by the pruning of pip fruits from June onwards. Pruning should be pushed forward as rapidly as possible during the fine weather so that the necessary work of picking up and destroying the prunings may be completed before the spraying season commences.

—R. G. I. HAMILTON, District Supervisor, Horticulture Division, Auckland.

Citrus Notes

Citrus Pests

SUCKING insects, other than scale insects, which attack citrus trees, are the black-aphis, *Aphis citricidus*, and the mealy-bugs, *Pseudococcus* spp.

The black-aphis is a pest of the spring and early summer months, and is generally seen in dense masses on young foliage which becomes distorted as a result of the infestation.

Black-aphis is viviparous or gives birth to living young. There are two forms, one winged, the other wingless. Characteristic structures of these insects are three projections at the rear end of the body, a projecting tail piece or cauda in the centre, and a cornicle or honey-tube on either side. The black-aphis does not appear to be a major pest and is readily controlled by a spray of nicotine sulphate, 1 part to 800 parts of water, plus soft soap 3 lb. per 100 gallons of spray.

There are two species of mealy-bug which infest citrus in New Zealand—*Pseudococcus adonidum*, the long-tailed

mealy bug, and *Pseudococcus maritimus*, the short-tailed mealy bug. These insects are white and mealy, oval in outline, more or less flattened, and ornamented with white filaments at the margin of the body. The short-tailed form lays eggs but the long-tailed form is viviparous. Mealy bugs produce large quantities of honey dew and infested trees soon become covered with the sooty-mould fungus, *Capnodium citricolum*. To control mealy-bugs spray with a certified summer oil 1 part to 80 parts of water (1½ per cent.) plus nicotine sulphate 1 part to 800 parts of spray.

Mealy bugs infest a wide range of hosts besides citrus. These include the apple, pear, quince, peach, plum, dahlia bulb, gladiolus, fuchsia, clematis, rhododendron, grape, potato tuber, walnut, willow, ivy, passion vine, tomato, cactus, wisteria, oleander, New Zealand flax, cineraria, begonia, etc.

Citrus-thrips, *Heliothrips haemorrhoidalis*, and the red-mite, *Paratetranychus citri*, are in the rasping and sucking category.

The effects of citrus-thrips are usually more readily observed than the detection of the insect itself. A citrus tree severely infested by citrus-thrips will have a silvery appearance. This is distinct on foliage and stem, but on the fruit thrips injury is often confused with blemish through wind rubbing or the effects of grey-scab. This silvery appearance is due to the action of this insect in rasping the plant tissue and sucking up the exuded sap. Thrips prefer shaded conditions, and usually cause most damage in the interior of dense old trees. Citrus-thrips occur on a large list of host plants which include the apple, pear, peach, tung-oil, azalea, and rhododendron. Very severely infested rhododendrons are often seen around Auckland, and the characteristic leaf damage of citrus-thrips can be readily seen by collecting specimens from this host. The insect itself is

small, narrow, and black, and when mature has two pairs of narrow whitish wings which are fringed with hairs. When the insect is crawling these wings are folded along its back and appear as a longitudinal whitish streak down the middle of the abdomen. Thrips lay their eggs in the plant tissue. At blossoming time another species of thrips is frequently seen crawling over citrus flowers. The latter species is very common, is known as blossom-thrips, and does not cause injury. However, it is possible that the true citrus-thrips may be present also, and these usually cause considerable blemish to the young fruit at the stem end. However, it is better to apply the oil and nicotine spray during the summer months rather than make a special application in spring.

Citrus-thrips are not readily controlled and thorough spray coverage is necessary. Spraying should be done on a hot, still day in February or March, using a 1 per cent. certified summer oil plus 1 part nicotine sulphate in 800 parts of the oil spray. If necessary repeat three to four weeks later. Owing to the risk of causing defoliation, lime sulphur is not recommended.

The citrus-red-mite, *Paratetranychus citri*, is a rasping and sucking organism very closely related to the spiders, and causes most damage in hot, dry summers. Foliage of infested trees shows a characteristic pale yellow appearance due to lack of chlorophyll caused by the impoverishment of the sap of the leaf. The mite itself is very small, a purplish red colour, and with fairly long pink hairs on its back. It lays yellowish-red eggs which are prominently stalked. The citrus-red-mite, being so small and light, is readily dispersed by wind. It can be easily controlled by spraying with a certified summer oil at 1 per cent.

The Hard-wax-scale *Ceroplastes sinensis* is most readily controlled in May by the application of a one per cent. certified summer oil.

—A. M. W. GREIG, Citriculturist, Wellington.



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Fruit in Storage

THREE important factors in obtaining an improvement in pre-cooling and the long storage of fruit are:—

1. A sufficient quantity of ammonia piping should be installed on the expansion or cooling side of the system. The amount of cooling pipe surface will affect the temperature difference between the pipe surfaces and the air circulating over them. This temperature difference between the pipe surfaces and the circulating air will determine the amount of moisture that condenses on the pipe surfaces, and thus will control the relative humidity of the storage atmosphere.

2. The cooling pipe should be evenly distributed in a position in each stor-

age chamber to provide for a thorough distribution of the cooling throughout chamber above the stacked fruit.

3. The installation of sufficient cooling pipe surface, from which drip trays are suspended in open spaced formation near to the ceiling of the storage chamber above the stacked fruit.

4. Speeding up the gravity air circulation throughout the storage chambers and the stacked fruit by the use of comparatively low-powered air circulating fans. By this means the relative humidity of the storage atmosphere may be controlled at a percentage that is highly beneficial for fruit storage, i.e., 85 to 90 per cent., and the rate of heat transfer will also be adequate for all legitimate requirements for pre-cooling.

The Release of Fruit from Storage.—

An indiscriminate release of fruit from long storage stocks should be avoided

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—A. A. POWELL, Cool Storage Officer, Wellington.

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29 H.B. MEN'S STORES—WHANGAREI TO INVERCARGILL

Guide for the Home Garden

Work in the Home Garden for June

ADDRESSING the visitor who appeared to have "dropped in" quite casually, the farmer who was working in his garden remarked, "So you are the officer of the Department of Agriculture who writes the notes on Home Gardening which appear in the 'Journal of Agriculture' every month, and I suppose you have come to have a look round 'my' garden and advise 'me' how things should be done 'here.' " (The gentle accusation was admitted.) "Well, if you have no objections 'I'll' tell 'you' how the ordinary farm garden should be cultivated, what to do, how to do it, and perhaps 'you' may learn something from 'me'—an amateur." (The officer was agreeable.)

"Well, to begin with, I have been cultivating this garden for the last ten years, and for the first five years or so I had fairly good results, and, mind you, that was accomplished without the use of any kind of manure or artificial fertiliser. After that, I must confess, my vegetables appeared to be going off in quality, and to strengthen my conviction I had several unpleasant reminders from 'in there' (pointing to the kitchen). However, I began working things out in my own way, doing a bit of reading also, and came to the conclusion that, just as my live stock which had a range over several acres, on occasions required

extra feed, so my vegetable plants which for their food requirements were restricted to a very small area during their growing life might require some extra feeding as well. That I consider was a logical conclusion to arrive at.

"Accordingly, I decided on two lines of action. The first was that as soon as I had produced two vegetable crops in succession on any part of my garden I sowed that part with a green manure crop such as lupins or oats. My second was that the vegetables I would grow on any part of my garden would not be the same variety which had been grown as an immediately preceding crop. That is, I suppose, what you would call rotation cropping." (The officer agreed.) "My activity in endeavouring to get my soil back to its original fertile condition did not stop at this. Whenever it was practicable during spring and early summer I also gave parts of my garden a good dressing of stable or farmyard manure. At first I tried cow manure, but, as my soil is a bit heavy, I think this kind of manure had the effect of making it sticky and hard to work. You see, there is nothing like making observations and testing a few things out for one's self." (The officer agreed that these home garden experiments were very desirable, for, as no two garden soils

were exactly alike, different manurial treatment was necessary to maintain the soil in a condition suitable for vegetable growing.)

"The next thing I tried was lime," continued the farmer-gardener. "Previously it had not occurred to me that lime might be necessary in the garden. Of course, I apply lime regularly on my paddocks with good results to pasture, and since I started giving my garden soil a dressing of lime every year I believe it has improved the condition of the soil. One thing I have noticed concerning my cabbages, cauliflowers, etc., was that with the use of lime and, as far as I can do it, changing the position of my crops each year, I am never troubled with club-root on those vegetables now.

"See those young cabbage plants over there," said the gardener, pointing with justifiable pride to a bed containing about 200 well-grown spring cabbages, "well, they were planted after I dug out my potatoes. I cleaned up the patch quickly, burnt up the haulm which I suspected had contracted some disease, lightly turned over the ground and, after scattering a bit of blood and bone manure up the rows, I set out the plants, and haven't they come away all right." (To an inquiry by the officer as to whether any farmyard or stable



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manure had been dug in just before the cabbage plants were set out, a negative reply was received, the reason submitted being that if this were done during autumn the land would have a tendency to retain too much moisture during winter, and would be too cold to permit of reasonable growth before spring.)

"The season before last I had what I would term an unusual experience on this part of my garden," the conversation went on. "I had sown it with oats and let them grow right on as long as I could. When I dug them in I planted summer cabbages and lettuces on top of them. I don't exactly know what happened, but these plants never made any growth for about six weeks or more after being set out. Last season I had another crop of oats over here, and

when I was digging them in I scattered a small quantity—about $\frac{1}{2}$ oz. to the square yard—of sulphate of ammonia on the ground so that it was turned under with the green material, which, by the way, was rather well grown, and when the cabbage plants were set out they seemed to grow right away. That is only another instance of how observation of the conduct of the crops in one's garden will assist one to do the right thing. Maybe you can tell me why this happened. I confess it's got me beat." (The visiting officer remarked that the explanation was very simple and lay in the utilisation by the soil bacteria of nitrogen in the soil to assist in breaking down and decomposing the carbonaceous material which had been dug under. The result of the lack of this nitrogenous food which should

have been available to the plants was reflected in their poor growth, and was brought about by a temporary derangement of what may be termed the nitrogen-carbon soil ratio. A suggestion was made that on the next occasion a green manure crop was being dug in an application of agricultural lime—3 to 4 ozs. per square yard—made when the ground was freshly dug might be an additional advantage in assisting the newly-set out young plants.) "I see," acknowledged the gardener, "mine was a 'blind swipe' and I hit it. Of course, men in your position have the advantage of learning from all the gardeners you visit, and whatever additional knowledge you have learned from your discussion with me I hope you will pass on to 'the other fellow.'" (The officer was happy to give such an assurance.)

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Potatoes

Preparations for planting an early variety should now be under way, and the first thing necessary is the proper care of the seed for sprouting. A seedling box $2\frac{1}{2}$ to 3 inches deep is best for this purpose. The seed tubers, which preferably should be about the size of a hen's egg, can be set with the rose end up. When the tubers have been set to sprout they may be placed in a reasonably well-lighted shed through which passes plenty of fresh air. An equally serviceable position is under a tree or in the shelter of a live hedge; but certainly where the sprouting tubers will not be exposed to the danger of frost. The part of the garden in which it is intended to plant the early crop may be dug over any time now, and thrown up roughly in ridges, but no lime should be applied. When planting time arrives all weeds which have germinated will be destroyed by cultivation, the soil will be more easily worked down to a desirable tilth, and the first top shoots will be relatively free for early growth.

Rhubarb

Gardeners with a bed of this desirable vegetable—for so it may be classed—known sometimes as the "pie plant," should pay particular attention to it during winter. It will return adequate compensation for the care it receives; on the other hand, neglect will be manifested by the miserable stalks which the roots will send up. Over-manuring of rhubarb is almost a practical impossibility. The bed should be thoroughly cleaned up and given a heavy application of well-rotted stable, farmyard, or fowl manure. Should supplies of any of these not be available, blood and bone manure may be applied at the rate of two handfuls to each crown. Whatever manure is used, it should be lightly dug in. The soil should be

merely turned over on top of the manure; deep digging may seriously injure the feeding roots which are never far below the surface.

As rhubarb crowns should not be permitted to remain in the same place for more than three to four years, it is a good plan to dig out some of the roots each year. They may be removed during May or early June and set away from the sun. To prevent them drying out, they should be placed where they will get plenty of rain. About July they will begin to show "buds," and can then be divided and planted out.

Onions

These seedlings should be kept particularly free from weeds. If neglected, growth will be seriously impaired at a time when the young plants require to be carefully attended so that they may be ready for transplanting in early spring. A weak solution of nitrate of soda, half a teaspoonful to the gallon of water, applied every two weeks, will help the plants to keep growing.

Spring Carrots

Conditions under which commercial vegetable production is at present being carried on will hardly permit of extensive growing of early carrots, and in view of this every effort should be made to provide adequate family supplies from the kitchen garden. If the seed has been sown on raised beds, ample drainage will be assured, and good drainage is essential for early spring carrot production. In low-lying beds the young roots are likely to be continually in cold wet soil, a condition which will inevitably result in root-rot setting in with disastrous results to the expected crop. Any endeavour to stimulate growth under such conditions would be merely wasted effort. Careful hoeing between rows with a hand tool, and hand weeding between the plants is necessary to prevent the soil from "packing" during winter rain.

Spring Onions

Seeds of this variety can be sown at almost any time of the year, and where they are specially desired for salad purposes may be grown in a box which should not be less than six inches deep. The box in which it is intended to sow the seed should be well filled with a good potting soil with which has been mixed a couple of handfuls of bonedust. The seed can be broadcast, pressed into the soil, and lightly covered with some of the soil mixture—without the bonedust—which was used for filling the box. When completed, and during cold weather conditions, the box may be placed in a shed until germination starts, when it should be instantly removed to a sheltered position in the garden. In this manner, spring onions can be grown to maturity without in any way impairing the value of the crop.

Spring Cabbage

Plants of this variety set out during late March or early April should now be making reasonably good growth, but they must be protected against the ravages of slugs and snails, which will be very active while cool moist

weather conditions prevail. Burnt or hydrated lime is an inexpensive and efficient remedy which will destroy these pests if applied at the right time and in the correct manner. In the evening, when darkness is falling, the lime should be "thrown" along the rows of plants. Much of the lime used will rise in a cloud and come in contact with the under-side of the leaves where the pests are feeding. No uneasiness need be entertained concerning the probable damage to the plants through contact with the lime. After destroying the slugs, the lime will ultimately, through the action of rain, be deposited on the soil and will thus have served a dual purpose.

Asparagus

As soon as the top growth turns brown it may be cut away and destroyed by burning. The bed can then be thoroughly cleaned up. No stable or farmyard manure should be applied as a surface dressing during the winter months. The moisture-retaining qualities of these manures would tend to prolong the cold condition of the soil and prevent early warming in spring. This would probably delay production considerably.

Conservation of Agricultural Machinery

AT any time, periodical inspections and overhauls of farm machinery, tractors, etc., used in primary production are very desirable; but, under present conditions, these overhauls have become an urgent necessity.

When such machines are being used, instructions should be given for the exercise of the greatest care during operations. Careful driving and manipulation can save wear and tear. When not in use, it is an advantage to see that all machines are adequately protected from weather conditions which may be responsible for rapid

deterioration. Old used motor car engine oil may be applied freely on parts which are likely to become rusty and unworkable.

After spraying, it is essential that all equipment used should be thoroughly flushed out with clean water before being housed. This is particularly desirable where the spray mixture has been such that it might have a deleterious effect on the metal parts of the machinery.

In order to conserve rubber supplies, tractors and other machines used for land cultivation are now available with steel wheels only. It is therefore incumbent upon owners to take all possible precautions to prolong the useful life of the rubber tyres with which their machines may be equipped. They should be regularly tested to see that the correct pressure is maintained.

Farmers, market gardeners, and others who own machines which may frequently require spare parts renewals from overseas should appreciate the difficulty of securing these under present circumstances. While everything possible is being done to ensure supplies being available, the difficulty of the position should be realised, and no guarantee of replacements is possible.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

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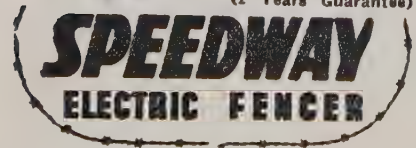
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Seasonal Work for Beekeepers

Grading of Queens

THE cautious, prompt, and skilful beekeeper will be able to secure at least an average of 60 to 80 lb. of surplus honey from each hive in most parts of New Zealand during a normal honey production season. It is appropriate, at the present time, after the close of the season for beekeepers, especially beginners, to examine the records kept of the surplus honey produced by each hive.

Where the amount stored by a few colonies is much below the average for the balance of the apiary, old or poor queens are usually responsible for this. Very often the beginner is unable to distinguish between good and poor queens until it is too late in the season to apply corrective measures. A description of queens of varying quality and the work they do will enable beekeepers to mark all hives which have shown poor results during the year, and which should be re-queened as early as possible in the new season; also to distinguish old or failing queens at the first examination in the spring.

Grading of Queens

Queens may be described as virgins, untested, tested, and select tested.

Virgins.—A newly-emerged queen is termed a virgin to distinguish her from queens which have been fertilised and are laying. Queens mate with the drone bee on the wing high up in the air. The mating flight usually takes place from four to ten days after birth of the queen. Virgin queens are very slender, and are slightly shorter in the body than fertilised queens. They are very nervous, move rapidly among the bees when a hive is being examined, and are extremely hard to find once they have gained strength after hatching, particularly in dark races of bees.

Untested.—In general an untested queen is one which has been mated and has been permitted to lay eggs for a few days; but not long enough for the emergence of her worker bees.

Tested.—A tested queen is one which has been permitted to lay until her workers begin to emerge, so that by their colour markings the pure mating of their mother is demonstrated.

Select Tested.—Select tested queens should be used as breeders for all queen-rearing purposes, and should exhibit better all-round qualities than the average tested queen. Their workers and drones should be even in colour according to race and strain; they

should be docile and easy to handle, and, above all, should be good workers. The best breeders are more prolific, and are usually larger in the body than the average queen. They also move about their work systematically and deliberately, even when their hive is being examined by the beekeeper. Queens should be required to demonstrate their qualities over a complete season before being chosen as select breeders.

Poor Queens.—A poor queen is usually weedy in appearance and does a poor job of egg-laying. Her brood is patchy and irregular, and the colony is unable to make normal progress. A queen is classed as second rate if her worker bees are nervous and difficult to handle, or are poor workers generally.

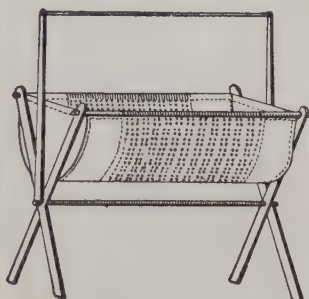
Careless handling of queen-cells by the beekeepers before the queens hatch may cause injury to them from which they never fully recover. Where a young queen in the larval stage is insufficiently fed by the nurse bees, due to lack of proper hive conditions, or

where the beekeeper during artificial queen-rearing operations unwittingly uses larvae over the age limit for this work, poor queens result.

Good Queens.—In colonies where there are plenty of nurse bees, a good queen lays her eggs compactly in the combs, beginning in the centre and gradually extending the circle of brood to the outer edges of each comb. In appearance she is plump and hairy with an extended body indicating good egg-laying capacity, and usually remains in this condition well into her second season.

The first indication of a failing queen is her incapacity to continue laying eggs at a normal rate. With age her body begins to shrink slightly and takes on a mottled appearance. She also gradually becomes bald until her head and thorax are quite black and shiny. Needless to say, queens should be replaced before they reach this latter stage. A good plan is to re-queen every hive each year, or at least every second season.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

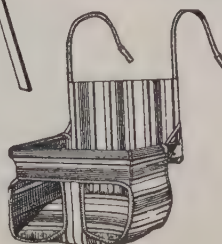


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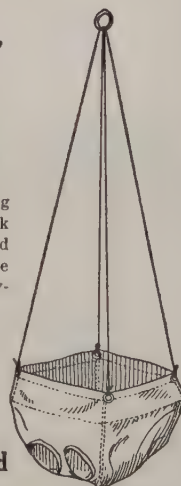
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Notes for the Poultry Farmer

Chick-Sexing

WITH the rapid approach of the chick-rearing season, poultry-keepers are considering the problem of chick-sexing. Unfortunately, this is a problem under present-day conditions, when New Zealand has insufficient chick-sexers to adequately meet the demand for sexing. To this aspect of the problem must be added the difficulties of supplies of petrol and tyres. A number of chick-sexers are serving in the forces, but fortunately the essentiality of this work has been recognised, and two sexers have been retained for Home Defence only in order that their services may be available to the industry during the hatching season. However, the matter of chick-sexing has been complicated further for the coming season by the fact that Mr. C. C. Green, who has in past years done valuable work in Southland, is now serving with the military forces in Australia. There appears at present to be little chance of his visiting New Zealand for the coming hatching season, despite efforts already made to secure his release to enable him to carry out chick-sexing work over here. News is still awaited of Mr. J. Clark, the Canadian chick-sexer, who sexed a large number of chicks in the Auckland Province last season. It is hoped, however, that his services will be available again this year.

Chick-Sexing in 1941-42

Some idea of the importance of chick-sexing to the poultry industry may be gauged from a study of the following figures, which show the numbers of chicks sexed in the four main centres during the seasons 1941 and 1942.

District	No. of chicks sexed in 1941	No. of chicks sexed in 1942	Difference
Auckland	281,000	264,260	—16,740
Wellington (including Hawkes Bay, Manawatu, and part of Taranaki)	311,000	332,000	+21,000
Canterbury	459,941	440,861	—19,080
Otago-Southland	410,110	418,023	+ 7,913
Totals	1,462,051	1,455,144	— 6,907

These figures do not represent the total number of chicks sexed in New Zealand since there is a small number of poultry-keepers who sex their own chicks, and who have not been requested to return figures regarding sexing to the Department. The decrease in the number sexed in Auckland was probably due to Mr. Clark

By F. C. BOBBY,
Superintendent of Poultry Husbandry,
Wellington.

making a late start, following travelling difficulties between Canada and New Zealand. The lower figure for Canterbury in 1942 reflects a falling-off in the number of chicks reared in this district.

1943 Season

Poultry-keepers are advised that it is hoped that the following chick-sexers will be available for the coming season:—

Auckland: Mr. J. Clark and Mr. D. E. Hopkins.

Wellington (Manawatu, Taranaki and Hawkes Bay): L/Cpl. J. C. Jamieson. Mr. L. Doughty, and A/C2 W. H. Barnes.

Canterbury: Mrs. Carter, Driver K. Gibson, and Mr. W. Jury.

Otago-Southland: Mr. G. Thompson and Pte. A. B. Pirie.

In addition to the above-named, it is anticipated that a limited amount of help from other chick-sexers may be available. Furthermore, the Department anticipates being in a position to assist chick-sexers in the matter of recommendations for adequate allocations of petrol during the months June to October inclusive.

It is essential, however, that poultry-keepers should realise that the travelling of chick-sexers must be kept down to a minimum, consistent with the work requiring to be done. This is

attempted under more favourable conditions. Travelling takes up valuable time, and is tiring.

Both loss of time and tiredness, due to excessive travelling, reduce the amount and the efficiency of the chick-sexing attempted. In this connection poultry-keepers can assist considerably by doing all possible to fix their their hatching days to suit the itineraries of the chick-sexers, while, where several poultry-keepers are able to concentrate their chicks at one farm for sexing, both time and travelling will be saved. Consideration will be given to applications by poultry-keepers for small allocations of petrol where such supplies would enable the setting-up of local depots for chicks required to be sexed. Poultry-keepers must expect difficulties in chick-sexing under present conditions, but everything reasonably possible will be done to maintain this service, which has become so important to the industry.

Tuition in Chick-sexing

The need for additional chick-sexers for 1944 is not being neglected, and an attempt is being made to arrange for the services of L/Cpl. Jamieson and Aircraftsman Barnes for instructional work during next season.

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Chick-sexing Certificates

The Department will be pleased to receive applications from those wishing to sit for the Department's examination in chick-sexing. Full details of the conditions under which certificates will be granted may be obtained on application to the Department. If desirable, examinations will be held early in July, and again in November. Applications to sit for an examination in July must reach the Department not later than the first week in June, and for the November examination not later than the first week in October.

Diseased Birds At Auction Markets

All poultry-keepers should now be aware of the fact that it is illegal under the Poultry Act, 1924, to offer for sale at public auction markets birds

which are suffering from disease. Any such birds found at any public auction market by a Poultry Inspector of the Department are liable to be destroyed without prior warning to the owner-consignor. In this connection poultry-keepers are now advised that whenever a Poultry Inspector causes any diseased birds to be killed at an auction the Department will forward to the owner-consignor a notice declaring that these birds have been destroyed. Thus, any poultry-keeper who is notified on a bill of sale that birds have been destroyed should receive an official notification from the Department confirming this fact. If no such official notification is received, the poultry-

keeper is advised to communicate with the Department without delay.

Poultry-keepers are reminded that the use of dirty crates for transporting birds to markets, and the offering of diseased birds for sale, are both actions against the best interests of the poultry industry. In the latter case, the poultry-keeper renders himself liable, on conviction, to a fine. It is satisfactory to be able to record that there has been a decrease in the number of diseased birds sent to the markets in the main centres during the past six months, but there is still room for improvement in this connection.

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Federation of Young Farmers' Clubs

Meeting of Y.F.C. Dominion Executive Committee

A MEETING of the Dominion Executive Committee was held in Christchurch on Thursday, April 8, those present being Messrs. D. S. Ross (Dominion President), R. J. Reid (Dominion Vice-President and Chairman of the Otago-Southland Council), T. E. Streeter (Chairman, Canterbury Council), D. E. Waide (Chairman, Auckland), P. W. Smallfield (Director of the Fields Division, Department of Agriculture), M. M. Burns (Lincoln College); A. B. Stewart, A. S. Trotter, S. R. Whyte and J. W. Wilson (Otago-Southland Council); J. Barclay, R. S. France, S. A. La Roche, L. W. McCaskill and R. Wightman (Canterbury Council); W. H. Benson, B. J. Colleton and Macgregor Donald (Wellington Council); and S. Freeman (Dominion Organising Secretary). An apology was received from Mr. S. G. Avery (Chairman, Wellington Council), who had been unable to secure travelling accommodation. Apologies were also received from Messrs. A. C. Cameron, Maitland Clark and C. G. Grocott (Otago-Southland Council); C. J. Craig and W. F. McLaren (Wellington Council); A. F. Walter (Auckland Council); A. C. Morton (Massey College); J. M. Bremner and A. P. O'Shea (N.Z. Farmers' Union).

In welcoming the delegates the President, Mr. Ross, expressed gratification at the representative meeting, and paid a tribute to those members, both active and advisory, whose efforts had been responsible for the carrying on and maintaining of the organisation in the face of the many difficulties and handicaps experienced.

Discussion

Matters of importance were dealt with as follows:—

Land Settlement and Rehabilitation: It was decided to endeavour to obtain direct Y.F.C. representation on the Rehabilitation Committee, the Organising Secretary being instructed to take whatever steps were possible in that direction.

Y.F.C. Pamphlet: Messrs. La Roche and Freeman were congratulated on the results of the work they had put into the production of a special folder, a printer's "proof" of which was submitted to the meeting. The folder was approved and adopted as part of the propaganda for use in connection with the "drive" for recruiting lads leaving school as members of the Y.F.C. and for the establishment of clubs, where possible, in district high schools and

secondary schools throughout the Dominion, following on the success of those already functioning. Distribution of copies of the folder was arranged, and the matter of the necessary "follow up" was left in the hands of the president, the organising secretary and Mr. La Roche.

National Competitions: It was decided that no endeavour be made to carry on with national competitions (such as stock-judging, debating, etc.) until such time as transport and other conditions render this feasible and practicable. It was, however, considered that the essay competition should be encouraged and carried out on a national scale and that every effort be used to make it a success; to that end a sub-committee was set up (consisting of Messrs. La Roche, Reid, Waide and Barclay) to draw up a set of rules and conditions—these are set out elsewhere in this issue.

Financial Statement: This showed a credit balance of £712 4s., and included the Government grant of £500 for the current year. It was decided to allocate £400 of this to the four councils i.e., £100 each.

Organising Secretary's Report: This indicated that, so far as the position in regard to clubs and activities as reported at the last meeting, the position was virtually unchanged. The annual meetings of clubs were in progress, and it was pointed out that some of them might find themselves unable to carry on owing to further depletion of membership; it was, however, anticipated that the Government's decision to release youths under twenty from military obligations would doubtless assist considerably in that respect. Delegates from the four councils reported on the position in their respective areas, and it was decided to request that written reports be received from councils at future meetings, as comprising a valuable and necessary source of information to the executive committee. The organising secretary further stressed the need for club secretaries, and also district secretaries, to submit reports of their meetings and other activities for publication in the Y.F.C. section of the "Journal of Agriculture."

Policy: This was discussed at length and a motion was carried re-affirming the Federation's policy as laid down at the last annual meeting—in short, that every effort will be made to keep the organisation alive.

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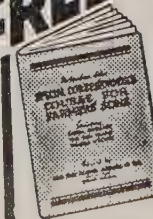
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ADDRESS

J.A.



"Leadership": The report on leadership was received, and after the members of the sub-committee responsible were congratulated on their fine effort the matter was freely discussed. The organising secretary's action in publishing it as a report in the last issue of the "Journal" was endorsed, and the report was adopted with certain alterations, it being understood that the details of the report, as finally passed, would be notified by circular to all units of the Federation. The alterations carried by the meeting were as follows (see copy of report in last month's Y.F.C. section of the "Journal"): Paragraph (3) to be deleted and replaced by the following: **"Recognition of Leadership.**—It is suggested that the names of those demonstrating marked qualities of leadership, dependability, initiative and resource—evidence of the cultivation of a sense of responsibility and of development of a critical attitude to all problems during the year—be recognised by inscribing on a Leadership Roll; the idea to be applied to clubs, district committees and/or councils at their discretion." Paragraph (5)—the sentence "Have system of marks . . . etc. . . . conduct a meeting are absolutely essential," to be deleted. Paragraph (6) to be entirely deleted, and paragraph (7) automatically omitted as the circular to clubs, etc., will contain all necessary instructions. The following additions were made to paragraph (1): (a) "Responsibility for reading and interpreting the aims and objects of the Y.F.C. movement as set forth in the constitution"; (b) "Responsibility for forwarding reports of meetings and other club activities to the organising secretary for inclusion in the 'Journal' notes."

Remits

The following remits were dealt with:—

(1) From Auckland Council—"That the matter of obtaining oil fuel for delegates to attend council meetings be brought to the notice of the Dominion Executive Committee for action in such cases where other reasonable transport facilities are not available." The organising secretary reported that he had already been in correspondence with the Oil Fuel Controller, who had promised to make investigation particularly in regard to the requirements of members of the Auckland Council; it was suggested that the president interview the Oil Fuel Controller.

(2) From Auckland Council—"That an endeavour be made to arrange for the Federation annual general meeting to be held in the middle of June of this year." After discussion it was decided that the most suitable time for delegates from most districts to attend was round about the end of June or beginning of July; it was therefore decided to fix the date for

either June 30 or July 1, according to the suitability of the inter-Island ferry service.

(3) From Wellington Council—"That the matter of the district secretaryships in the Wellington Province be taken up with the Department of Agriculture with a view to defining how far the Instructors concerned can be expected to function as secretaries in view of the extra work at present imposed upon them." During discussion it was apparent that members recognised the position in regard to many of the Instructors. Mr. Ross paid a tribute to the work of the Department in general, and the Instructors in particular, in fostering and assisting the Y.F.C. movement. He mentioned the difficulties presented by the fact that in some cases the Instructors acting as district secretaries were unable to devote sufficient time to the movement on account of the extra work entailed by vegetable production and other work in connection with the war effort. It was suggested that in some cases active club members might be able to take over, or at any rate assist. The

Director of the Fields Division, Mr. Smallfield, was of the opinion that the best plan would be to consider the matter district by district to see what individual arrangements could be made; he suggested that the Department would possibly be agreeable in some cases to officers of Divisions other than the Fields Division acting as Y.F.C. district secretaries for the time being. He proposed to go into the whole matter at an early date and assured the meeting that every assistance would be given to assisting the district committees. Mr. Smallfield was thanked for his interest and consideration.

Mr. Whyte brought up the matter of the Y.F.C. Experimental Trials, and stated that he understood that the Department's Crop Experimentalist was still willing to make seed and fertiliser available for certain plot trials. A motion was carried, "That the Department be asked to renew the offer of seed and fertiliser to clubs and schools for the purposes of the Co-operative Experimental Scheme."

The meeting closed with a vote of thanks to the chair.

Reports on Club Activities

WESTERN SOUTHLAND.

Dipton.—Business meeting; general discussion. Monthly dances to be held, the proceeds to be devoted to soldiers' parcels. A successful outing on hacks took place during the month, members spending a profitable and enjoyable time. Mr. Stevenson, president of the Southland Farmers' Union, has congratulated this club on its efforts in continuing despite difficulties.

Orepuki.—At the March meeting it was decided to hold a field day and dog trial early in June. Debate to be held on the occasion of the general meeting; subject to be "That Machinery has contributed to the Happiness of Mankind." C. M. Erskine and S. G. Dillon elected leaders. An enlightening address on "The Present Day Banking System" was given by Mr. G. A. Wilkes, postmaster, Riverton. The club has a total membership of 27, plus 14 members in the armed services. Twenty members attended the meeting. At previous meetings, now reported, various debates were held, among the subjects being: "That a Young Man starting Farming should take up Undeveloped Land in preference to Developed Land"; "Is Non-stripping Injurious to the Herd." Talks were also given as follows: "Ensilage" (Mr. A. Stuart, Department of Agriculture), "Modern Propaganda" (Mr. B. C. Horrell), "A Trip through Canada and England" (Sgt. Pilot A. McPherson), "Citizenship" (Mr. G. A. Wilkes). A debate and social was held, the profits amounting to 30/-; the debate was contested between the club team and a local Farmers' Union team, and was followed by a dance. Two teams were selected to enter for the district inter-club debate. W. R. Brown was appointed as the club's representative to the Orepuki branch of the N.Z. Farmers' Union. Throughout the period covered by reports the attendance has been particularly good.

MID-CANTERBURY.

Methven.—Annual meeting. Officers elected: Advisory president, Mr. R. J. Low; chairman, R. Wightman; deputy-chairman, A. McKay; secretary, J. Watson; treasurer, J. McKendry; committee, club officials, with the addition of D. Campion, B. Anderson, S. Callaghan and C.

Watson. Seventeen members attended out of a total of 38. Projected activities for the season were discussed and arrangements made for field days, judging competitions, etc. The Farmers' Union to be approached regarding the appointment of a club member as a delegate to their Executive Committee. A. McKay appointed as representative on the A. & P. Association's committee.

CHRISTCHURCH.

Darfield.—Annual meeting. Officers elected: Advisory presidents, Messrs. R. S. Gunn and C. O. Redfern; chairman, C. Stott; vice-chairman, R. Reed; secretary, G. H. Eaves; asst. secretary, J. Duncan; committee, club officials, with the addition of A. McLachlan and F. Jarman. There were ten members in attendance. Arrangements were made for a field day on Mr. R. S. Gunn's farm.

Ellesmere.—Annual meeting. Credit balance, £14 4s. 3d. Officers elected: Advisory president, Mr. G. W. R. Osborne; chairman, D. Hurford; secretary, O. J. Osborne; asst. secretary, N. Lambie; committee, club officials, with addition of H. G. Stephens, L. McLachlan, W. T. Abbot, A. Brown; delegates to district committee, Mr. G. W. R. Osborne (senior), D. Hurford, O. J. Osborne (active members). Eighteen members were present at the meeting.

MARLBOROUGH.

Seddon.—Annual meeting. Officers elected: Advisory president, Mr. N. Gee; chairman, J. Watson; vice-chairman, H. Gluyas; secretary and treasurer, R. Denton. This club has a membership of 17, plus 16 members in the Services.

MANAWATU.

Bunnythorpe.—Annual meeting. Officers elected: Advisory president, Mr. Linklater; advisory members, Messrs. Galpin, Stewart, Gunn and Robson; chairman, M. Donald; secretary, B. Fowler; committee, club officials, with the addition of S. Anderson, W. Gee, E. Gore and J. Wood; auditor, Mr. A. F. McKenzie; delegates to district committee, advisory president, chairman and secretary. Final arrangements

for judging the potato competition were discussed. Decided to enter classes of vegetables at the Women's Institute show, as follows: potatoes, carrots, parsnips and tomatoes. Syllabus of lecturers for the current season to be drawn up. Fourteen members were present at the meeting.

Feilding.—Annual meeting. Officers elected: Advisory president, Mr. A. C. Buick; advisory members, Messrs. H. C. D. Somerset, J. H. Mason and H. D. Brewster; chairman, E. Beazer; secretary and treasurer, G. Milligan; committee, club officials, with addition of I. D. Colquhoun, E. Whisker, G. Bailey, E. R. Gray and L. Avery; delegates to district committee, Messrs. Buist, Colquhoun, Beazer and Milligan; representative on Farmers' Union executive, E. Beazer. Seven members were present out of a total membership of 33, including members overseas and in camp. It was unanimously decided to carry on the club and hold monthly meetings.

Rongotea.—Talk by R. O. Gloyd, a club member, on "Erecting a Boundary Fence." The advisory president, Mr. H. J. Lancaster, congratulated members on their successful efforts in keeping the club active. It was decided to hold the annual meeting in conjunction with the usual Parents and Friends evening. The attendance was thirteen out of a total membership of 20.

WAIRARAPA.

Alfredton.—Annual meeting. Past year's officers re-elected. Decided to hold annual dance, profits to go to the Patriotic Fund. Total membership, thirteen, all of whom were present at the meeting.

Carterton.—Annual meeting. Officers elected: Advisory presidents, Messrs. A. Scott and E. Bliss; chairman, W. Campin; secretary, H. M. Staples; asst. secretary, D. Fell; treasurer, J. Rose; reporter, T. McQueen; committee, club officials, with addition of B. Card, E. Pearce and B. Brassell; delegates to district committee, Messrs. W. Campin, H. Staples and A. Scott. At the conclusion of the election a debate was held. There was an attendance of nineteen out of a membership of twenty-two.

WANGANUI.

Bulls.—Annual meeting. Credit balance, £16 1s. 7d. Officers elected: Advisory president, Mr. S. J. Avery; advisory members, Messrs. A. D. Young, R. Bartlett, and J. A. Cornfoot; chairman, C. J. Mullin; secretary and treasurer, G. Torrey; delegates to district committee, advisory president, chairman and secretary. Sixteen members attended. The Dominion Organising Secretary, Mr. S. Freeman, addressed the meeting; he also exhibited some "sound" films of agricultural interest.

Mangaweka.—Annual meeting. Officers re-elected. Credit balance, £12 14s. Decided to keep the club going and hold meetings where possible. The club has a membership roll of 21, five of whom are on active service and eight in the Territorial forces.

Tainape.—Annual meeting. Officers elected: Advisory president, Mr. P. Kearns, Jnr.; chairman, B. J. Collerton; secretary, E. W. Laws; committee, H. Anderton, R. Batley, I. Peed, G. Thurston, D. Gresson; advisory members, Messrs. W. Benson, J. Gilbert, P. Bird.

SOUTHERN HAWKES BAY.

Dannevirke.—The committee met before the meeting, and drew up the programme of activities for the year; this included two-minute talks by members, which were considered good practice, particularly for the younger members. The programme was approved and adopted by the meeting. Eight new members were enrolled. Mr. G. Cammock explained the Returned Services Gift Stock Scheme to the club. A talk was given by Mr. S. J. Mitchell on "The Co-operative Movement"; the speaker quoted some very interesting figures relative to the growth of the co-operative movement in Great Britain, and explained the working of the C.W.S. and its retail branches. There were twenty-four members present.

TE KUITI.

Otorohanga.—Annual meeting. Credit balance, £4 19s. 8d. Officers elected: Advisory president, Mr. H. H. Evans; chairman, D. V. Brightwell; secretary, V. J. Reed; treasurer, G. Clark; com-

mittee, H. Murphy, W. Staite, A. Bell, T. Rose. There were twenty-five members present.

Paewhenua.—Date fixed for annual meeting. A lantern lecture was given by Mr. Nicholson dealing with "Life in Nigeria." Ten members were present out of a membership of seventeen. At the previous meeting, which was similarly attended, impromptu speeches were delivered by members.

BAY OF PLENTY.

Tauranga.—Annual meeting. Credit balance, £4 4s. 9d. Officers elected: Advisory president, Mr. G. Hynds; chairman, J. R. Wright; secretary, J. Rowlandson; treasurer, A. Wood; committee, club officials, with addition of W. O'Shea and C. Murray; delegates to district committee, Messrs. G. Hynds, J. Wright, and J. Rowlandson. Fourteen members were present.

Te Puke.—Annual meeting. Officers elected: Advisory president, Mr. D. S. Ross; chairman, D. Cadwell; secretary, E. Melton; treasurer, B. Bragg.

Te Puna.—Business meeting. Arrangements for birthday party approved. One new member enrolled. Mr. Harvey to be asked to lecture at next meeting. Ten members present at the meeting. A very successful birthday party was held in the Te Puna hall; this took the form of a dance, with novelty items: Hawaiian Trio (the Ross family), piano accordion (J. Wright, who also sang a song). There were two novelty dances and three raffles, which netted £4. Mr. Keith I'Anson acted as M.C. At supper time the chairman, Mr. A. Lloyd, welcomed the visitors, and Mrs. S. Williams, wife of the advisory president, cut the birthday cake given by Mr. Lloyd. Mr. J. Wright replied on behalf of the visitors. There were approximately 250 people present. At meetings previously unreported arrangements were made for a Hay competition, and addresses were given by Messrs. A. Walter, district chairman, and Mr. S. Williams. Officers elected at the annual meeting: Advisory president, Mr. S. Williams; chairman, A. Lloyd; secretary, Keith I'Anson; treasurer, Ray Williams; delegates to district committee, Messrs. S. Williams, A. Lloyd and Keith I'Anson.

Y.F.C. National Essay Competition

THE following are the conditions laid down for the proposed Y.F.C. National Essay Competition:—

1. The competition will be open to all financial members of Young Farmers' Clubs (within the prescribed age limits of 14 to 30).

2. There will be two classes: (a) Senior — open to those who have reached their 18th birthday on August 31, 1943. (b) Junior—open to those under the age of 18 years on August 31, 1943.

3. SUBJECT: "Citizenship, and the part that can be played by the Young Farmer."

4. The length of the essay to be between 1,000 and 1,500 words.

5. CLOSING DATE: August 31, 1943. Essays must reach the Dominion Organising Secretary, Young Farmers' Clubs, P.O. Box 3004, Wellington, on or before that date.

6. The name of the competitor must NOT be written anywhere on the essay. Competitor's name and address, and club of which a member, should

be clearly written on a separate slip of paper and attached to the essay. It is preferable that essays should be written on foolscap paper.

7. Prizes are offered in each class, to the value as follows: First, 3 guineas; second, 2 guineas; third, 1 guinea. Prizes will take the form of orders for books made out on any bookseller nominated by the prizewinner.

8. A competent independent judge will be appointed by the committee.

9. The winning essays in both sections will be published in the Y.F.C. section of the "Journal of Agriculture"; if possible all that secure awards will be published.

The above conditions were laid down by the following committee set up for that purpose at the recent meeting of the Dominion Executive Committee: Messrs. S. A. La Roche (Canterbury Y.F.C. Council), R. J. Reid (Dominion Vice-President), D. Waide (Chairman, Auckland Council), and J. Barclay (Chairman, South Canterbury District Committee).

TE PUKE Y.F.C.

Calf-rearing Competition

THERE was a large attendance of members of the Te Puke Young Farmers' Club at a field day held on Saturday, March 27th. This activity was held in connection with the judging of calves in the annual calf-rearing competition. It was both gratifying to the committee and pleasing to the judge to find the entries of a much higher standard this year. Competition was very keen, and the judge, Mr. F. Higginson, found it difficult to place the entries in their order of merit. After the calves had been inspected members were given the opportunity of viewing the yearling heifers on each farm in order that comparisons could be made between the stock of different ages.

The popularity of the competition was shown by the very warm welcome extended to the party at each farm, and the lavish manner in which the visitors were entertained. Transport for the day's outing was generously provided gratis by club members and farmers.

—By W. P. NICHOL, Te Puke Y.F.C.

Health Notes for the Farm

The Eyes As An Index To Health

AS an index to the state of a person's health, the eyes can tell a very interesting story when they are examined by an expert. Certain signs directly associated with body changes that might never be suspected are revealed to the specialist, and many a threatened breakdown in health has been halted through the simple process of an eye test.

There is a common belief that glasses are the first thing to try when something goes wrong with the eyesight. This theory is fraught with danger, and is undoubtedly responsible for much needless suffering.

People are apt to ignore the fact that the cause of the trouble may be something entirely apart from the eyes themselves. The visual mechanism—that is, the eyeball, with its muscular, nerve, and brain connections—is not an optical instrument operating independently of the rest of the body.

It is part of the body, just like other sensory organs. It is made up of the same living tissue, and is subject to the same nervous and vascular influences. It must obtain its nourishment from the same blood supply, and it must eliminate waste matter like any other organ of the body. Obviously,

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then, its normal action depends on the normal functioning of the body as a whole.

That is the point that should be emphasised, because it is a point that is too commonly overlooked. For instance, if the body equilibrium is disturbed, as in the case of tuberculosis, syphilis, diabetes, or nephritis—to mention a few diseases—the visual mechanism frequently does suffer injury and resulting loss of vision.

Warning of Trouble

Indeed, failing eyesight may be one of the earliest manifestations of such systemic diseases, and by getting early attention to the eyes the victim has an immeasurably better chance of clearing up the major disturbance in the body. As a warning of trouble the eyes frequently play a most important part.

Let us go into a little more detail. The parts of the visual mechanism most frequently involved in various

diseases are the retina, the optic nerve, and the visual portion of the brain.

Take the retina—that remarkable human lens which transmits the visual impulse along the optic nerve to the occipital portion of the brain. When this delicate lens becomes affected by injury or disease, reduced vision or blindness is the result. The eye specialist will be able to tell what the changes mean, if there happen to be any changes.

As a matter of fact, in most cases scarring or degeneration or atrophy of the retina is due to internal disease, and the eye specialist is frequently the first to discover the presence of such disease. Among the general diseases that affect the retina are Bright's disease, diabetes, syphilis, high blood pressure, and hardening of the arteries.

Then we have the extremely delicate optic nerve. This may be affected by a diseased condition of the body such as brain tumors, syphilis, sinus infections, and chronic poisoning from lead or tobacco. Just as with the retina, many serious systemic diseases betray their presence in this nerve, and the specialist therefore often has the opportunity of not only saving the patient's sight, but his life as well.

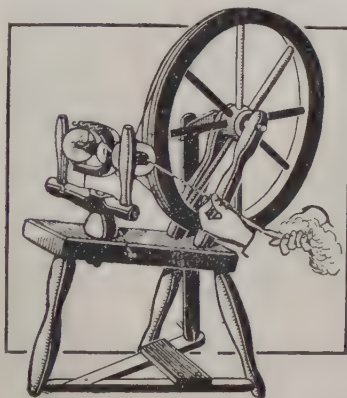
Optic Nerve Head

There is also a disease which acts on the optic nerve head within the eyeball itself. This is known as glaucoma, or hardening of the eyeball, and it mostly affects people of middle and advanced age. Glaucoma is responsible for much blindness, although by early recognition of its presence much can be done to stop or limit its progress.

Don't jump to conclusions about your eyesight. Always remember that the eye is an extremely sensitive instrument, and whenever anything goes wrong with it—no matter how slight—examination by a competent specialist is desirable. In addition to correcting any visual disturbance, he may also help to correct a major, and much more serious, upset in some other part of your system.

It is easy to keep mint fresh for several days. Wash it under running water, and place it in a glass jam jar. Turn the jar upside down so that no air can get in, and leave the mint inside until you want to use it.

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ARE the days of this year slipping by as quickly for you as they are for me? Why, it is May already, and really it seemed only yesterday that we were wishing each other a happy New Year! How time flies! Do you ever wish you had had a fairy godmother who at birth had bestowed upon you the gift of making just one wish come true? I do, often, but then I suppose it would be so difficult trying to make up my mind just what I was going to use my so precious wish on, and maybe I would save it all my days in the hope that some day something really worthwhile would turn up, and in the saving I may lose it altogether. No, on second thoughts I am glad I had no fairy godmother to bestow such a gift on me, but I am sure I did have a fairy godmother hovering about somewhere when I was born, and she did give me one gift—of that I am sure—the gift of enjoying the days as they come and go.

When springtime comes, I am always quite sure that Spring is the loveliest season of the year, and who does not thrill when the grey skies lift, and the blue of spring skies are revealed again, like a gay flag waving above the world? Yet, in the same strain, when summer comes, I am sure that it is summer who is Queen of the Seasons, summer with her long, lazy afternoons beside a sparkling sea, with nothing but peace, and warmth, and contentment. Comes autumn, there is a quiver of golden leaves aslant the grey of a driving rain perhaps, and my heart tells me that surely it is autumn that I love best of all, autumn with her rich and mellow beauty on all sides. But winter, O how my heart warms when the cold winds set in, and the stinging southerly whips a new and living scarlet in the cheeks, and the days are short, and nights are long. For it is evening in winter that I love best of all. Loneliness is unknown to me, for my ideal companions for a winter's night can be shared by all of you—a good book, soft music, and a glowing log fire. And happiness is mine, and in the magic realms of the book on my lap I wander far from the everyday world in which I live, and perhaps I am 'neath a burning summer sun in the tropics, so that I do not hear the rain

From Me To You

beating on the windowpane. Yes, winter is the best season of all. Do you know this verse? It is such a comfort to me as I hurry home through the dusk of a winter's evening, and it has a welcome ready for me each night.

"It's getting a little bit chilly,
It's nice to be hurrying home,
There's somebody there, and a comfy
armchair,
To welcome you in from the gloam.
The toast will be ready to butter,
The kettle will splutter and sing,
Now, out in the gloam, I'm hurrying
home,
Ah, life is a wonderful thing!"

And every night I am fortunate enough
to spend at home by the fire, with my

radio and my book for company, I think of my unknown fairy godmother, and bless her for the happiness she has showered on me in this gift of finding happiness indoors when everything outside is so black and bleak. And it is a gift that goes further and deeper than that, too—it is a gift which has enabled me to find content and inspiration in a world that is not contented or inspired, it has given me hope when the days ahead seemed but an endless round of monotonous days, and it has been a hope that has always been justified. Seek for happiness within your own soul, and you will find that outside there is happiness too to be found for the searching. Keep a smile on your face, and though the world about you be dark and dreary, the sunshine will pour out from the shining house of your soul, and gladden not only yourself, but many others too.

Mary

When Mary Goes Walking

When Mary goes walking
The autumn winds blow,
The poplars they curtsy,
The larches bend low.
The oaks and the beeches
Their gold they fling down,
To make her a carpet,
To make her a crown.

—Patrick Chalmers.

To Sister E.W.

You gave me a white carnation:
Was it in sympathy?
And did you know the flower meant
Youth's glad world to me?
A simple white carnation,
Yet you seemed to understand
What I craved was a woman's smile,
The touch of a gentle hand.
So you gave me a white carnation—
'Twas a foolish thing to do,
For whenever I see carnations now
I shall always think of you.

Where Happiness is Found

In friendships; in good thoughts; in helping others; in friendly letters; in pleasant words; in little kindnesses; in social intercourse; in work that we love; in mutual confidences; in healthy recreations; in cultivating the mind; in doing duty cheerfully; in making others happy; in facing life with a smile; in achieving worthy ambitions; in the companionship of books; in doing one's best regardless of reward.

Happiness grows at our own firesides, and is not to be picked in strangers' gardens.

Most of the shadows in this life are caused by standing in our own sunshine.

To give pleasure to a single heart by a single kind act is better than a thousand head-bowings in prayer.

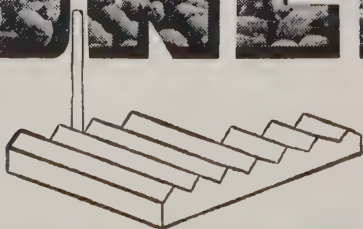
I shall pass through this world but once. Any good thing that I can do, or any kindness that I can show any human being, let me do it now, for I may not pass this way again.

"Happy Days"

Lapping ripples against a gleaming hull, and drowsy warmth of Summer sunshine are promises of the peaceful days to come. Until then we must forfeit some of our necessities, so that if you cannot buy your full requirements of Onehunga Blankets please remember that they are to-day on active service with those who need them most. But Onehunga quality is worth waiting for until the days when peace and plenty return to our land



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Keeping Them Amused on Wet Days

I THINK I was wrong after all! You see, I always thought it was so hard trying to find new ideas to amuse the kiddies on those wet days, but since reading the splendid ideas which you have shared with us, I am just waiting for the next wet day with impatient anticipation so that I can try some of them out.

First prize to "Kowhai," of Mangatainoka, with second to "Fruffy," Te Awamutu. Many thanks, all of you, for your ideas, for I am sure many mothers will find wet days less trying after reading this month's entries.

First Prize:

MY mother had a very large family, and she was an adept at always, and apparently without effort, keeping the children busy and happy. I have found that her methods work just as well with my own children, and here are some of the wet day favourites.

For those above the tiny tot age marbles were an easy first. There were four boys all close together, and they spent hours at a time, in only a light drizzle, and wearing coats, on a cleared space under the trees alongside the house; on wet days there was a special mat which was always "the ring," and there they played by the hour. For the tinies the chief wet day delight was their own little table, a simple article that any father could make, narrow, about 2ft. 6in. long, and just the right height of course. With four little chairs, and a coat of green paint, what a place to paint or crayon or model, or to sit round with their own little plate of eats, and their own glass of milk when grown-ups were having afternoon tea.

Then there was ever such a perfect modelling medium as a piece of dough, specially made for the purpose, very stiff, and just flour and water. How superior to plasticine, which couldn't be popped into the fire after a busy afternoon's pummelling, and which is so difficult to clean from hands, nails, mats and floors. Sometimes when there had been much hand-scrubbing and great efforts at cleanliness, the dough went into the oven, and out came fearsome little "cakes" which did not deter childish appetites.

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Wanganui.

The old dull-edged scissors (somehow they all got like that) with rounded, not pointed ends, filled many an hour, as scraps were cut out and pasted in books, and paper mats of wondrous design were made. Certainly there seemed to be a lot of accumulated debris from this pastime, but a flick or two of the broom and into the fire, and soon all was tidy again.

Especially for the girls, though the boys were not averse to its charm either, was the dressing-up box. It was an old tin trunk kept locked and not allowed out too frequently. What hours of delight there were pirouetting before the mirror in those worn-out evening frocks, those still gay and once lovely scarves or shawls. How carefully they were put away at the end of a long, happy wet afternoon.

All these things were good, but the age-old instinct for a story was our usual desire; how still we sat when our demand for a tale was answered, and how Mother could tell a tale "out of her head." There is no magic to equal that of a good storyteller. My own flock have had to be satisfied with that second best: a story, well chosen, and read with as much expression as I could put into it, and they still loved to hear me read to them, even after they had learned to read themselves. Yes, mothers, one thing leads to another; begin, and with every wet day your inventive faculty will grow.—**Kowhai, Mangatainoka.**

Second Prize:

LIVING up in the hills we have a fair percentage of wet days, but so far have not found it hard to keep the kiddies amused. It usually seems best to follow up the mood of the child, and provide the necessary material for the game he suggests, as he will be content longer with a game he has thought of for himself. The round-about-two-year-



old will like to get loose in the saucepan cupboard, and will try fitting the lids on them till he finds the right one for each saucepan. He will also keep amused for hours if you give him a light hammer (a wooden one will do), large-headed nails, and a bar of soap to drive the nails into. Don't worry if you can't get the nails out, for they soon come out in the soap shaker; and the bits of soap that get round the floor are an aid on scrubbing day. A clothes line of fine rope tied between two chairs, pegs, and a few hankies or pieces of rag also fascinate the younger ones.

All ages from 18 months upwards enjoy the slide which we make out of a polished board 6 feet long, and about 1 foot wide, fastened to the top of my kitchen step-ladder. Hard on the pants, perhaps, but great fun! The same board placed between two chairs makes a balancing board to walk along. They all love a piece of dough, a few currants, etc., to make dough boys, which are afterwards cooked, but not always eaten. The older ones love dressing up, and acting some story they have had read to them. Acting seems to appeal to them mostly, for the games Grandmother played—shops, school, hospitals—never fail to fill up wet days happily. And how they love to wind up with a picnic tea, packed in individual boxes, eaten in the "Park," which in reality is just the sitting room, or some special corner where they don't usually dine.—**Fruffy, Te Awamutu.**

THE following recipe for home-made plasticine, which I have tried successfully myself, is both clean and inexpensive, and should provide many hours of peaceful amusement. Mix together equal quantities of flour and salt, and add sufficient water to make a very stiff dough. Then knead it thoroughly; the more it is used, and

thereby kneaded, the better it is. It can be coloured with the colourings used for cooking. If left overnight it should be placed in a bowl covered with a damp cloth to prevent it from going hard. Another advantage of this home-made modelling material lies in the fact that if any of the children produce a masterpiece that is worthy of keeping, this can be done by baking the model in the oven—just put it in a cool oven, and leave overnight.—**Loopy, Dunedin.**

NO matter how busy the mother is, let her spare time for a story. Let her lead the little ones into that golden land where are fair princesses, gorgeous palaces, pirates, elves, fairies and foolishness in all glorious profusion. Then at some thrilling moment stop suddenly, and let one of the youngsters take up the tale. He in turn gives place to another, so that they feel they are all contributing something to the story.

And what about that exciting game of fishing? The tiny fisherman dangles his rod over some improvised barrier—a rug over a steady chair-back or couch will do. Down below, mother, with much mysterious rustling, fastens on a parcel containing chalks, a paper hat, raisins, or some odd trifle, which is hauled up and opened with glee.—**Bonanay, Kati Kati.**

ONE of my suggestions for keeping children amused on wet days is threading beads. At the present time there are very few on the market, but most houses have some old bead necklaces, or teapot stands which can be

Competitions

May

"Strange Phobias" is the subject for the competition which closes on June 15th and I am eagerly looking forward to reading about your strange fears. So don't be late with your entry.

June

Often and often when reading your letters I have been delighted to hear from you how much cheer and comfort you derive from constantly keeping before you happy and encouraging thoughts. So I just think this month it would be a grand idea if we were to share those thoughts that make days seem brighter, and perhaps shorter. "Tiggetty Boo" sent me one of her favourites some time ago, and what a delight it has been to me. Written by Grace Crowell, it goes like this:—

"And hope will come again, and joy
and gladness,
You will forget your burden or your
grief,
There will be sunlit roads with strength
to walk them,
There will be peace again beyond
belief."

So send in your Cheerful Thought, and in a few words tell us how it has helped you.

Two prizes, first 10/- and second 5/-, and this competition closes on July 15th.

"MARY,"

C/o "Journal of Agriculture,"
P.O. Box 3004, Wellington.

taken to pieces. Get a fine darning needle and have it cut off, leaving only about one and a quarter inches of needle at the eye end. This needle is then quite safe for children to work with. Attach a double thread to it, and tie a bead on the end. Now leave the children to it. Encourage them to make rings, bangles, etc., for themselves or dolly.—**M.A.M., Southland.**



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Mary's at - Home -



DO you remember the black net frocks covered with sequins of silver that our grandmothers used to wear, or was that before your time? Well, I have just come in from watering, a never-ending job at this time of the year, and our city just looks like one of those old frocks. The night is dark, and a haze hangs over the city, while twinkling through are thousands of tiny lights, just like sequins. Here and there a bright note is added as a red sign flashes, and away to the right there was a green one just like an emerald. I love the city now the black-out is over, and I am afraid I waste many an hour just sitting on the couch in a dark room, with nose flattened against the window pane. I see the aeroplanes in the sky, then the landing light flares up, and the plane lands. Miles away I can see a train coming, or a motor car travelling the lonely roads.—**Biddi-Jan, Redcliffs.**

MY thoughts have been on gardening lately, Mary. Yes, a long bulb bed that must be a joy to behold in the spring—tulips, daffodils of a prize lineage, lachanalias, polyanthus, hyacinths. But alas, just now the bed is gay with marigolds, wallflowers, verbena and clarkia—and like a young cuckoo, they have no right to be there. My garden is very gay, and the dahlias this year are lovely.

I want to send you a recipe for wedding cake that I read lately. "Four pounds of love, half a pound of buttered youth, half a pound of good looks, half a pound of sweet temper, half a pound of self-forgetfulness, half a pound of powdered wits, half an ounce of dry humour, two tablespoons gentle argument, half a pint of rippling laughter, and half a wineglass of common sense. Put the flour of love, good looks, and sweet temper into a well furnished house; beat the butter of youth to a cream, mix together self-forgetfulness, powdered wits, dry humour, and gentle argument, then add to the above. Pour in gently the rippling laughter, common sense, work it together until it is well mixed, then bake gently for ever."—**Peggy, Pleasant Point.**

JUST recently I found myself with a few spare moments, and nothing to read. So I took out the "Journal" from the first number of our pages. It was such fun reading over "From Me to You," and all the letters, and I began to wonder what had happened about Biddi-Jan's market flower gar-

den, and John-in-the-Middle's Army career and her success or otherwise with the paintbrush, and many other things about the members of our happy invisible circle.—**Tiggetty Boo, Kati Kati.**

I LOVE gardening and all outdoor work; I like cooking, and I do like to see a clean shining house, but I am not very good at keeping it clean, for I feel it is rather a waste to be indoors if it is a fine day, and I could be out of doors. We live away up the hills in the bush, in a convenient wee home that my husband built himself, and we are miles from the nearest town of any sort. So we seldom do any shopping except by mail. Sometimes six months will pass without our going to town, but we are so happy and contented that we feel we just like staying home best of all. Strange for me to feel so satisfied, for I worked in a shop for 10 years before I was married, and life then was full of social gatherings, etc. I love nature, music, animals, big open fires—I'm sitting in front of one at the moment and finding it very hard to keep awake—and I like meeting new people. I like tennis, and swimming, and driving the car. I like reading, though seldom have time for it, and I like "good thoughts," which I copy into a notebook when they appeal to me. Well, I just seem to like so many things that I had better sum it up by saying "I'm in love with life."—**Fruffy, Te Avamutu.**

HOW I did enjoy your pages for brides in a recent issue. Although I was not an Easter bride, it gave me great pleasure to read all about it again, and what pleasure we all derive from weddings! Some one once said to me, "There goes Mr. and Mrs. So-and-so—that's the end of them." But no, I feel it was rather the beginning, for in joining our life with that of another person, surely it portrays a new beginning. Some one likewise said what a lot of unhappy marriages there are, but if we only take the trouble to look for the happy ones instead, we would be surprised at the number. I was amused and pleased to overhear two young ladies remark as a couple came into a theatre "There goes another happy couple." Good luck to the couples who set the example as it were, by the success they have made of their marriages. It means a lot to those single folk who are not yet married, and are still summing up the pros and cons.—**Roundabout, King Country.**

WHEN I was a little child my mother was always ailing, and I thought of being a nurse chiefly through loving the dear soul who tended my mother. I took numerous jobs, and when I reached the age to enter hospital for training, I did so, and later took midwifery. I spent many long happy years with the mothers and babies, and how I loved those babies! Some are married now, some still single, and many have given their lives for freedom. When I gave up nursing, and in spite of having my own three children, life was very empty, and I longed for something to fill the gap. Again I tried all sorts of things but nothing satisfied me until we commenced farming. It is a full, carefree life, and I love the animals, and each of them has their own individuality, which was an eye-opener for me. I love gardening, especially vegetable, and enjoy sitting down to home-grown vegetables for our own meals.—**Susannah, Cambridge.**

I SHALL never forget cycling through a lovely English village in the very early morning, no one astir except a few housewives scrubbing their doorsteps that led to the wide village street. The road wound itself up the hill from a beautiful arched bridge spanning the river. Higher up an old castle overlooked everything. It was all so very still and quiet and ancient—and so peaceful. And other memories crowd in too—memories of riding parties on Exmoor ponies exploring the Lorna Doone country; long tramps over wild, heather-covered hills, eating whortleberries and stopping at little country tea places or farmhouses for glorious Devonshire cream teas!—**D.J.O., Gisborne.**

WHAT a great part we can play in winning this war! I have my motto printed on a card hanging on my kitchen wall: it says "Keep smiling—there is always tomorrow." I think "tomorrow" is one of the most inspiring words to keep in front of one today, and I know that someday soon that day we call tomorrow will be today, and what a grand day that will be for us all!—**A.S.C., Carterton.**

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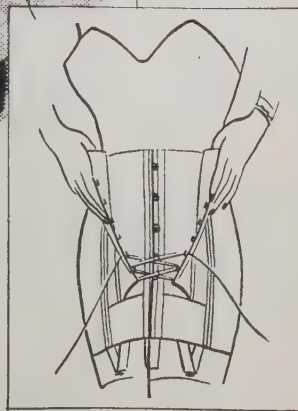


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Mary's Mixing Bowl

Soups That Are Different

THERE are two things about winter that I love—one is a log fire and the other is a good bowl of steaming soup! And I am sure you will all agree with me that nothing is more appetising in the winter months than soup in one form or another. Generally speaking soup recipes can be classified under one of three main headings: Clear soups, thickened soups, or purees. And the secret of good soups is slow and steady cooking, with a judicious amount of flavouring. Soup should be seasoned lightly before it is served, for it is easy to add more salt or pepper, and nothing is more unpalatable than soup which is over-salted.

The foundation of all soups is stock, and this can be made from fresh meat, bones, fish, vegetables, or scraps of cooked meat and bones, etc. Stock has different names, too. Brown stock is made principally from beef with sometimes a little veal or some chicken bones added. White stock is obtained from any white meat such as veal, rabbit, or chicken. Fish stock is made from fish or fish trimmings. In winter-time most families have a stock pot

always on the stove, and this cannot be too highly recommended, for as I said before it is slow and steady cooking that gives soup its flavour.

The basis of a clear soup is good brown stock which has been carefully strained, and allowed to become cold. Always be sure to skim all the fat off the top of the stock-pot before using the stock for soup.

A broth differs from a clear soup in that it is unclarified, and the meat with which it is made is either served in the soup, or lifted out and served as a separate course. Broth is very substantial, and is excellent as a luncheon dish.

Puree is perhaps the most economical form of soup. It differs from other thickened soups in that its thickening is effected by rubbing the meat, fish, vegetables, or other ingredients of which it is composed through a sieve, and serving them in the soup. The secret of a good puree is to simmer all the ingredients slowly until they are quite soft, otherwise you will have difficulty in sieving them. When sieving have two spoons in readiness, one

to do the rubbing through with, and the other for scraping the underneath side of the sieve. Stand the sieve with the narrow rim uppermost within a basin. Moisten the mixture with some of the liquid part of the soup when necessary, and from time to time remove what adheres to the lower side of the sieve with the second spoon. What comes through is called the puree. As little as possible should be left on the top of the sieve when the work is finished.

When making pea soup, ask your grocer for a ham bone, and cook this in the soup pot. You will be surprised at the distinctive flavour it gives your soup. And have you ever tried making those little sippets that are so delicious in pea soup? They are easy to make—here's how to go about it. Cut up any scraps or crusts of bread into small uniform pieces, put them on a tin with some dripping, and brown them in the oven. You will need to turn them over now and again to keep the colour even.

Now for some soup recipes which I am sure you will find delicious, and you had better make a good potful each time for I am sure your family will all ask for more each time you serve them.

CHEESE SOUP WITH PARSLEY.

Take equal quantities of grated cheese and flour. Mix whole eggs with them, allowing one to each person. Pour the required quantity of boiling milk or stock over the mixture. Pepper

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it generously. Cook over a very gentle heat, stirring continually with a wooden spoon. Just before it comes to the boil strain it into a hot soup-tureen, and sprinkle it with very finely chopped parsley, or a mixture of parsley and chives.

GREEN SOUP.

Put a number of green vegetables—little new peas, and French beans (sliced finely) into boiling water. When they are tender, add a puree of potatoes, a little butter, and a spoonful of very finely chopped parsley. Serve at once. A few thin slices of pickled gherkin will give the soup a very refreshing quality.

HAM AND CELERY SOUP.

Chop up two onions, powder them with a little flour, and cook them in butter. When they begin to colour, add two quarts of stock, and about two ounces of ham cut into tiny strips. Bring to the boil, simmer a minute, and then add some thick cream.

Cut some crisp celery into very thin slices. Immediately before serving put it into the soup. It must not have time either to cool the soup, or to be heated by it.

PUMPKIN SOUP.

Make a highly seasoned puree of pumpkin, and add boiling milk to this. Let it simmer with pearl barley until this is tender, then serve.

This soup can be greatly improved by the addition of about three ounces of pounded ham, moistened with a little good stock, and half a pint of puree of onions seasoned with pepper.

SCOTCH BROTH.

- $\frac{1}{2}$ cup barley.
- 1 cup tomato puree.
- 1½lb. mixed vegetables.
- 5 cups stock.

Cook barley till tender. Put the vegetables through mincer and cook in sufficient water to cover them; add the barley and puree.

VEGETABLE SPLIT PEA.

- $\frac{1}{2}$ lb. split peas.
- 1 quart stock.
- Mixed vegetables.

Cook the peas to a pulp. Mince and steam the vegetables, and add to the pea soup.

VEGETABLE BROTH.

- 2 cups sliced carrot.
- 2 cups turnip.
- 1 cup cabbage.
- 3 stems celery.
- 3 quarts stock.
- Sprig parsley.
- 2 cups raw potato.
- 1 tomato.
- 1 onion.

Chop all vegetables, or slice very fine. Add the cold water, and let simmer for about 2 hours. Add a few beet leaves during the cooking to give a good colour. Strain and salt to taste.

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CREAM OF CUCUMBER SOUP.

- 2 cups milk.
- 1 cup stock.
- 1½ cups diced cucumber.
- 1 onion grated.
- 2 tablespoons flour.
- Salt.

Put the cucumber on to cook in the water. Add the grated onion and milk, and bring to the boil. Blend the flour with a little cold milk, and stir in. Cook 5 minutes, and salt to taste.

NOODLE SOUP.

On the Continent noodle soup is well known. To make the noodles, sift a cup of flour, make a hole in the centre, and pour in a well-beaten egg with a little salt. Knead and roll out very thinly, make into a roll, and slice. Dry the strips in an oven, warm, but with the door left open. Add them to any rich soup.

BETROOT SOUP.

Peel two medium-sized beetroots and cut them in slices, wash and shred three celery stalks, and peel and slice two onions or leeks. Melt a tablespoonful of dripping in a saucepan, put in the prepared vegetables, and cook them a few minutes without browning. Add a quart of meat boilings or light stock, mix and cook until the vegetables are tender, adding more liquid if necessary. Then rub as much as possible through a sieve and return the puree to saucepan. Add 1 dessert-spoonful of flour mixed smoothly with $\frac{1}{2}$ pint milk, and stir until boiling. Season to taste, and serve with fried croustons.

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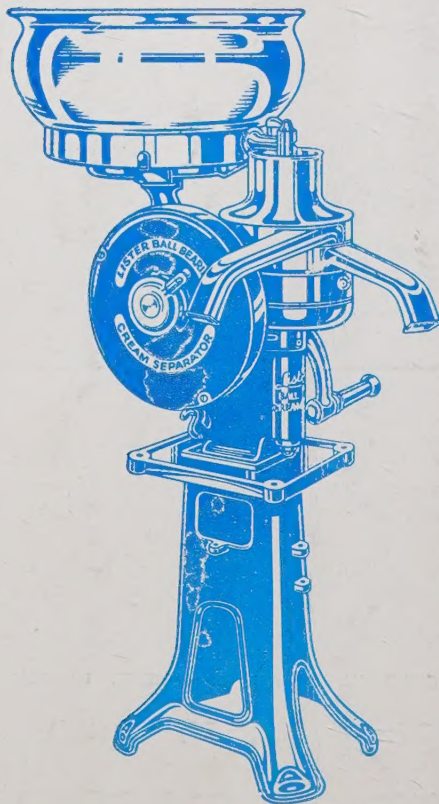
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